# ANALYSIS OF PROGRAM ACTIVITIES
# NATIONAL INSTITUTES OF HEALTH
# 1954

## CLINICAL CENTER
## NATIONAL INSTITUTE OF DENTAL RESEARCH

NATIONAL INSTITUTES OF HEALTH
PUBLIC HEALTH SERVICE
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

Report of progra... activities

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Nursing Department — LABORATORY, BRANCH OR DEPARTMENT
3. _____ — SECTION
4. _____ — LOCATION (IF OTHER THAN BETH.)
5. 12141 — SERIAL NO.

6. Nursing Activities
PROJECT OR ACTIVITY TITLE

7. Ruth L. Johnson, Chief Nursing Department
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Josephine I. O'Connor, Acting Assistant Chief
Gwen T. Will, Chief, Psychiatric Nursing Service
Elizabeth Walker, Chief, Cancer Nursing Service
Jane Wilcox, Chief, Heart Nursing Service
Ava S. Dilworth, Chief, Neurology and Blindness Nursing Service
Margaret Benson, Chief, Infectious and Tropical Diseases Nursing Service
Janet Fitzwater, Chief, Surgery Nursing Service
Kathryn Knight, Chief, Admissions and Followup Nursing Service
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

I. Objectives

A. To cooperate in planning for and in rendering service for the admission, clinical care, research activities and followup of patients admitted to the Clinical Center.

B. To provide a high standard of nursing care for patients and assistance to the clinical research staffs in the categorical Institutes.

C. To foster the research point of view among members of the nursing staff through better understanding of the goals of the clinical research projects.

D. To carry out a staff education program which will enable nursing personnel to function most effectively in the patient care program and help them to derive satisfaction from their work.

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II. Major Problems Encountered

A. Insufficient personnel to provide continuous nursing care to seriously ill and newly operated patients, to staff the observation and treatment laboratories on the North Corridor, to provide escort and other services without curtailing the nursing care to the remainder of the patients.

B. Insufficient number of supervisory personnel on the evening and night tours of duty.

C. Non-segregation of children from the adult patients and the lack of facilities for the care of children such as: low wash bowls and toilets, play areas and recreational programs, school facilities, etc.

D. Lack of facilities for the care of patients (not assigned to the Psychiatric Service) who develop psychotic behavior.

E. Lack of recreational and occupational therapy facilities for patients who must be confined to the nursing units (except on the Psychiatric Service).

F. Lack of bathroom and showering facilities for wheel chair patients on all services and lack of bath tubs on the Infectious and Tropical Diseases Service.

G. Inadequate storage space for children's furniture and play equipment.

H. Recruitment of a sufficient number of professional nurses to enable more careful and critical selection of persons for appointment.

III. Progress or Improvement

Better understanding and closer working relationships have been established between the Nursing and Medical Staffs.

A relatively high standard of nursing care has been provided for patients.

Better utilization of personnel and personnel time has been accomplished through the staff education program and supervisory process.

IV. Significance of Activities to the Clinical Research Program

Assistance in interpreting to the patient his role in clinical research and in establishing an environment in which he willingly assumes this role.

Provision of (1) a high standard of nursing care to patients and (2) assistance to the clinical investigators through (a) observing and recording essential data, (b) preparation for and helping with specialized procedures, laboratory examinations, etc., (c) sharing responsibility for planning projects and tabulating data, analyzing and evaluating findings, etc., (d) collaborating in the designing of specialized equipment and containers and methods for specimen collection, etc.

Collection of data related to staffing which may be of value in future planning, both as to numbers and categories of nursing personnel essential for this type of operation.

## V. Nursing Research

There are several projects underway which are of a long term nature therefore only a brief statement on each follows:

### Neurology Nursing Service

A study to determine the relationship between the number of nursing personnel hours available and the number of seizures, incidents or accidents which occur in patients with epilepsy.

### Psychiatric Nursing Service

A study of the administrative process in terms of patient and nursing staff participation. (PN-1).

Psychiatric Nursing personnel are collaborating with other disciplines in three studies:

1. Nurse-Treatment Study on 3 West.
2. Functioning of Psychiatric Nursing Personnel on 3 West.
3. Nursing Social Environmental Study on 3 West.

They are also participating in 14 other studies on this Service by recording behavior and other observations, serving as normal controls and interview subjects, etc.

## VI. Objectives for 1955

The objectives for 1955 are essentially the same as for 1954 with the following additions:

To improve methods of diagnosing and dealing with nursing problems through the group process.

To improve communication within the Nursing Department and between the medical and nursing staffs.

To improve the attendant training program.

## VII. Statistical Data

A. Number of Personnel on duty

| | January 1, 1954 | December 31, 1954 |
|---|---|---|
| Professional Nurses | 114 | 221 |
| Hospital Attendants & Practical Nurses | 60 | 109 |
| Clerical Personnel | 17 | 26 |
| Total | 191 | 356 |

B. Number of in-patients for whom nursing care was provided:

| | |
|---|---|
| Arthritis and Metabolic Diseases | 142 |
| Cancer | 334 |
| Heart | 396 |
| Infectious and Tropical Diseases | 264 |
| Neurology and Blindness | 313 |
| Psychiatry | 51 |
| Total | 1500* |

*Includes 48 patients transferred from one Service to another.

C. Average number of nursing hours available per patient per day for 1954 was 5.92 (overall).

Average number of nursing hours available per patient per day for each Service during 1954 was:

| | |
|---|---|
| Arthritis and Metabolic Diseases | 5.11 |
| Cancer | 5.7 |
| Heart | 5.28 |
| Infectious and Tropical Diseases | 5.1 |
| Neurology and Blindness | 5.16 |
| Psychiatry | 11.09 |

D. Number of hours of continuous nursing care (special nursing to individual patients) during 1954 was:

| | |
|---|---|
| Arthritis and Metabolic Diseases | 884 |
| Cancer | 1648½ |
| Heart | 4357 |
| Infectious and Tropical Diseases | 1053 |
| Neurology and Blindness | 11064½ |
| Psychiatry | 383 |
| Total | 19390 |

E. Services provided by Admissions and Followup Nursing Service by Institute during 1954:

| | No. Patients Provided With Nursing Care | Average Nursing Time Per Patient | No. Times Nsg. Personnel Went on Ambulance Trips |
|---|---|---|---|
| NCI | 1397 | 49.5 min. | 61 |
| NHI | 893 | 59.4 " | 26 |
| NIMH | 491 | 57.8 " | 2 |
| NMI | 1063 | 49.8 " | 14 |
| NIAMD | 319 | 49.1 " | 20 |
| NINDB (Neuro.) | 735 | 47.2 " | 65 |
| NINDB (Eye) | 1890 | 47.1 " | 0 |
| NIDR | 28 | 43.2 " | 0 |
| Misc. | 24 | 27.9 " | 0 |
| Totals | 6840 | | 188* |

*Average time per trip was 1 hr. 58 min.

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December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12141

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y. 1955 | $1,462,000 | 41 | 382 | 423 | 39 | 337 | 376 | |
| F.Y. 1956 | 2,009,000 | 61 | 525 | 586 | 56 | 453 | 509 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

I. Activities with other Departments and/or Agencies

a. Miss Elsie Ensing of Hammersmith Hospital, London, spent three months as a member of the nursing staff on the Metabolic Nursing Service to become oriented to techniques of metabolic research.

b. Members of the Heart and Neurology Nursing staffs cooperated in a nursing study conducted by Miss Faye Abdellah of the Division of Nursing Resources.

c. Mrs. Gwen Will has been selected for a special assignment to the Headquarters Staff of WHO in Geneva, Switzerland, to conduct a survey in Psychiatric Nursing early in 1955.

d. Miss Ruth L. Johnson has been appointed to the Nursing Advisory Committee to the Office of Vocational Rehabilitation and has been serving on the Advisory Committee to the Montgomery County Junior College in Takoma Park.

e. Miss Elizabeth Walker

1. participated in planning the program for the 1954 Symposium on Cancer held by the D.C. Chapter of the American Cancer Society.

2. was a member of the nominating committee for the Institutional Nursing Administrators Group of the Graduate Nurses Association of the District of Columbia.

f. Miss Jane Wilcox

1. participated in a two-day joint meeting of the American Heart Association and the Public Health Service.

2. assisted with the NHI exhibit at the World Cardiology Congress.

3. was a member of the planning committee and a speaker at the Cardiac Nursing Institute held in Washington, D.C. in March.

4. was a member of the planning committee and in charge of arrangements for the conference on Cardiovascular Nursing held at the Clinical Center in October following the World Cardiology Congress.

g. Mrs. Gwen Will

1. served as Psychiatric Nursing Consultant to the Nursing Committee of the Group for the Advancement of Psychiatry.

2. participated with Miss Agnes Middleton, her assistant, in Community Mental Health Education Programs by leading discussion groups at the Montgomery County Jewish Community Center, the Cooperative Kindergarten Mother's Groups and Parent-Teachers Associations in Montgomery County.

3. served as a member of the faculty of the Washington School of Psychiatry.

4. spoke at the Interdisciplinary Seminary of the Winter V.A. Hospital and Menninger Foundation in Topeka, Kansas.

5. served as psychiatric nursing consultant to the Public Health Service project on the integration of psychiatric concepts into the basic professional nursing project which is being conducted at the University of Colorado.

h. Miss Margaret Benson served as a member of the Committee on Research and Standards of the American Public Health Association.

i. Miss Josephine I. O'Connor

1. served as Chairman of the Finance Committee of the Maryland League for Nursing.

2. served as a member of the Maryland League for Nursing Committee to study needs and resources for continuing education for graduate nurses in Maryland.

3. served as a member of the Board of Directors of the Maryland League for Nurses.

j. Arrangements have been made with the Yale University School of Nursing to accept two senior students for two months elective clinical experience at the Clinical Center in April of 1955. One student has elected the Heart Service, the other the Neurological Service.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not Applicable

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December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12141
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not Applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not Applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Social Service Department
LABORATORY, BRANCH OR DEPARTMENT

3. _____
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12116
SERIAL NO.

6. Social Service
PROJECT OR ACTIVITY TITLE

7. Social Service Department, Chief, Dr. Daniel E. O'Keefe
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Assistant Chief, Ellen J. Walsh
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Objectives:

The basic objective of the Social Service program at the Clinical Center is to help patients and their families with their social problems in order to facilitate the selection, retention and planned discharge of those who meet the criteria for medical research projects of the various Institut of Health.

Methods Employed:

To meet the above-stated objective the Social Service Department by the use of case work methods facilitates the selection of research patients by preadmission surveys of prospective patients; assists in helping patien arrange to come to the Clinical Center; obtains significant social, economi cultural and emotional data related to patients' illnesses; conducts continuing research studies with these data; provides environmental and supportive services for patients and their families for the purpose of assisting them with social problems related to their illness which might adversely affect their participation in research; arranges plans for the discharge of patients; and cooperates with project directors for intensive followup reviews to assist in evaluating the effectiveness of research procedures on patients after they have left the Clinical Center.

Numbers and Kinds of Major Services Rendered:

Because there are no limitations geographically, social service contacts have extended throughout the United States, and to South America and Europe.

All the Institutes have used service in the areas of preadmission, inpatient, and followup; however, it is important to observe that each Institute has devised its own pattern for using social work according to the unique needs of the Institute.

Foremost among the services offered in the 14,344 interviews (see Table 1) were financial assistance to the patient's family obtained through public or private resources; the use of the Clinical Center Patients' Welfare Fund to provide basic necessities for needy patients throughout thei hospitalization; social evaluations requested by clinical investigators; supportive help to patients and their families because of grave concern about the severity of the chronic illness and its incapacitating effects; planning for further care in nursing and boarding homes; vocational rehabilitation in the patient's home community; and collaborating with the clinical investigators in evaluating ongoing social adjustment after corrective medical and/or surgical techniques.

In addition to direct service to patients, social service has been made more effective by planning conferences with national agencies such as the National Foundation for Infantile Paralysis, the United Mine Workers Welfare and Retirement Fund, the Travelers Aid Society, the Office of Vocational Rehabilitation, the Office of Puerto Rican Affairs, the Children' Bureau, and the Chronic Care Division of United States Public Health Service In this region, planning sessions have been carried on with the New York Heart Association, the Health Section of United Community Services and the Public Assistance Division of the District of Columbia.

Within the Center, orientation lectures have been held with the nursing staff and the Gray Ladies. Social Workers have participated in ward rounds, nursing conferences and have been particularly active in medical staff conferences related to problems of preadmission evaluations. (See Table 2).

R.P.C.-1(Cont'd)
December 1954

Patient Material:

TABLE 1

Social Services for Inpatients

| | NCI | NHI | NIAMD | NIMH | NINDB | NMI | TOTAL |
|---|---|---|---|---|---|---|---|
| January | 114 | 143 | 109 | 166 | 107 | 66 | 705 |
| February | 159 | 242 | 116 | 165 | 166 | 77 | 925 |
| March | 198 | 164 | 207 | 345 | 153 | 79 | 1,146 |
| April | 134 | 143 | 201 | 300 | 123 | 112 | 1,013 |
| May | 188 | 88 | 209 | 206 | 177 | 103 | 971 |
| June | 174 | 162 | 190 | 190 | 177 | 86 | 979 |
| July | 237 | 184 | 196 | 257 | 209 | 16 | 1,099 |
| August | 339 | 257 | 224 | 229 | 178 | 167 | 1,394 |
| September | 358 | 253 | 156 | 238 | 179 | 91 | 1,275 |
| October | 264 | 227 | 201 | 330 | 207 | 163 | 1,392 |
| November | 308 | 423 | 180 | 432 | 196 | 150 | 1,689 |
| December | 353 | 432 | 254 | 406 | 167 | 144 | 1,756 |
| TOTAL | 2,826 | 2,718 | 2,243 | 3,264 | 2,039 | 1,254 | 14,344 |

Casework interviews may have been held with the patient, a family member, physici social agency or other concerned person or institution.

TABLE 2

Institute Activities
Calendar Year 1954

| Institute | Ward Rounds | Medical Conferences | Nursing Conferences | Group Meetings | Inter-disciplinary Lectures |
|---|---|---|---|---|---|
| NCI | 41 | 18 | 21 | 4 | 3 |
| NHI | 160 | 40 | 26 | 21 | 17 |
| NIAMD | 126 | 34 | 25 | 16 | 8 |
| NIMH | 210 | 82 | 32 | *142 | 24 |
| NINDB | 132 | 50 | 4 | 8 | 2 |
| NMI | 97 | 50 | 10 | | |

*Principally group work sessions on the Children's Unit.

Major Problems Encountered:

1. Provision for numerous patient welfare needs not available through appropriated funds.

2. Transportation problems of patients without funds and lack of a transportation specialist.

3. Impossibility of complete coverage because of extensiveness and intensiveness of problems of patients with chronic diseases.

4. Inadequacy of community facilities to provide convalescent or terminal care for patients ready to be discharged.

5. Inadequate community financial resources to meet emergency and/or special needs of patients and their families.

6. Difficulty encountered in setting up staff ratios when the number of preadmission surveys cannot be known in advance and when followup studies require unknown time investment in travel away from the Clinical Center. Bed occupancy ratios are impossible to use under these circumstances.

7. Inadequacy of rehabilitation facilities.

8. Need for a transcription pool under Social Service Department to handle volume of recording for records and correspondence so that workload can be equalized.

9. Need for research consultation to assist casework staff to work more effectively with research project directors.

10. Difficulty of recruiting social service staff who can deal effectively with dual responsibilities of casework services and research methods.

Important Progress or Improvement Achieved:

1. The staff has increased by four members so that all Institutes now have coverage for many services.

2. Some non-governmental funds have become available for patient welfare activities through the Recreation and Welfare Association, Inc., the Commissioned Officers' Wives Association and through gifts from individuals.

3. The pilot study of "Attitudes of Patients About Coming to the Clinical Center" has reaffirmed the need for casework services prior to admission and has enabled better interpretation of the function of the Clinical Center to prospective patients.

4. Administrative studies have pointed up the amount of involvement staff members have in important aspects of various Institute programs and have shown that the full time of staff members cannot be devoted exclusively to casework since they also participate in Institute orientation, study programs, ward rounds, and interdisciplinary training. Because these activities are aimed at improving overall service, developing team relationships, and common understanding of the research goals of individual projects, it seems important that one-third of the caseworker's time continue to be devoted to these activities.

5. The social work record which is incorporated in the unit record has been shortened considerably to effect greater readability and economy.

6. The statistical system for the Social Service Department has been revised so that the material is now available on IBM cards. The new method saves secretarial time and provides readily available information regarding social services.

7. A monthly staff education program has been inaugurated to acquaint the staff with pertinent activities of related disciplines in the National Institutes of Health, and in other public and private organizations.

Significance of Activities to the Clinical Research Program:

1. Social work has made an effective contribution to the program through the use of social planning, service, and study aimed at helping the patient to participate in the project in a relatively comfortable frame of mind regarding himself, his family, and his livelihood.

2. The clinical investigators use social service to obtain data which contributesto greater understanding of the whole patient. This function seems of particular significance in a hospital devoted to research into the multiple aspects of clinical illness.

3. Social Service collaborates with the clinical investigator in the area of followup studies to help the patient to return and to assess his social adjustment, as the clinical investigator requests this service.

Proposed Course of Activities During the Next Calendar Year:

1. To increase staff so that social planning, social service, and social study can be extended as requested by the Institutes.

2. To continue the study of "Social Criteria for Research Patients" and to further similar studies in the Social Service Department.

TABLE 3

Preadmission Surveys

Calendar Year, 1954

| | NIMH | | NINDB | | NIAMD | | NCI | | NHI | | NMI | | ADM.&FOL-UP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required |
| Jan. | 6 | 76 | 4 | 4 | 0 | 0 | 1 | 1 | 2 | 11 | 0 | 0 | 1 | 3 |
| Feb. | 15 | 18 | 8 | 14 | 0 | 0 | 1 | 1 | 2 | 8 | 0 | 0 | 0 | 0 |
| Mar. | 14 | 21 | 5 | 8 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Apr. | 1 | 12 | 2 | 4 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| May | 11 | 13 | 3 | 8 | 2 | 19 | 2 | 6 | 1 | 1 | 0 | 0 | 0 | 0 |
| June | 17 | 43 | 4 | 3 | 1 | 2 | 3 | 19 | 0 | 0 | 0 | 0 | 0 | 0 |
| July | 12 | 40 | 2 | 3 | 0 | 0 | 2 | 9 | 1 | 1 | 0 | 0 | 0 | 0 |
| Aug. | 13 | 22 | 2 | 3 | 4 | 28 | 3 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sept. | 10 | 35 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 |
| Oct. | 10 | 17 | 4 | 7 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 2 | 2 |
| Nov. | 12 | 35 | 3 | 13 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| Dec. | 14 | 32 | 2 | 3 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| TOTAL | 135 | 364 | 41 | 74 | 12 | 68 | 13 | 45 | 7 | 25 | 0 | 0 | 11 | 14 |

TABLE 4

Followup Studies

Calendar Year, 1954

| | NCI | | NHI | | NIAMD | | NIMH | | NINDB | | NMI | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required | No. Pts. | Contacts Required |
| January | 3 | 13 | 2 | 4 | 0 | 0 | 0 | 0 | 3 | 16 | 3 | 14 |
| February | 2 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 5 | 28 | 0 | 0 |
| March | 1 | 1 | 1 | 4 | 1 | 5 | 1 | 6 | 4 | 5 | 3 | 15 |
| April | 0 | 0 | 6 | 23 | 0 | 0 | 0 | 0 | 3 | 4 | 6 | 31 |
| May | 3 | 8 | 0 | 0 | 1 | 8 | 2 | 5 | 8 | 36 | 3 | 11 |
| June | 5 | 25 | 4 | 42 | 2 | 8 | 1 | 2 | 5 | 21 | 1 | 1 |
| July | 1 | 1 | 6 | 51 | 2 | 10 | 2 | 3 | 5 | 10 | 0 | 0 |
| August | 6 | 16 | 1 | 3 | 1 | 1 | 1 | 1 | 6 | 21 | 5 | 35 |
| September | 10 | 70 | 11 | 40 | 2 | 9 | 2 | 2 | 17 | 13 | 3 | 0 |
| October | 10 | 16 | 11 | 28 | 2 | 2 | 1 | 0 | 21 | 12 | 2 | 0 |
| November | 12 | 112 | 13 | 23 | 1 | 0 | 3 | 17 | 17 | 19 | 7 | 16 |
| December | 20 | 50 | 23 | 66 | 2 | 1 | 2 | 7 | 12 | 12 | 1 | 0 |
| TOTALS | 73 | 314 | 78 | 284 | 15 | 48 | 15 | 43 | 106 | 197 | 34 | 123 |

R.P.C.-1(Concl'd)
December 1954

TABLE 5

Percent Social Service Coverage By Institute

By Months, Calendar Year, 1954

| | NCI | NHI | NIAMD | NIMH | NINDB | NMI |
|---|---|---|---|---|---|---|
| January | 61 | 63 | 75 | 100 | 60 | 32 |
| February | 54 | 37 | 82 | 100 | 74 | 37 |
| March | 69 | 59 | 83 | 100 | 79 | 62 |
| April | 44 | 55 | 87 | 100 | 67 | 54 |
| May | 46 | 54 | 98 | 100 | 67 | 50 |
| June | 60 | 49 | 89 | 100 | 61 | 50 |
| July | 58 | 46 | 94 | 98 | 63 | 18 |
| August | 60 | 63 | 98 | 93 | 63 | 49 |
| September | 59 | 49 | 98 | 94 | 60 | 36 |
| October | 87 | 51 | 100 | 97 | 66 | 40 |
| November | 55 | 54 | 96 | 80 | 61 | 45 |
| December | 68 | 61 | 86 | 96 | 60 | 39 |

Although 100% coverage of patients is desirable, this goal became increasingly less possible as additional beds were activated and social service staff did not increase in proportion.

R.P.C. - 2
December 1954

## Analysis of NIH Program Activities

Budget Data Sheet

10. 12116
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y.1955 | $ 109,100 | 16 | 7 | 23 | 13.8 | 6.7 | 20.5 | |
| F.Y.1956 | 136,100 | 21 | 9 | 30 | 18.4 | 8.0 | 26.4 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Not applicable

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12116
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDA YEAR 1954:

Not applicable

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Social Service Department
LABORATORY, BRANCH OR DEPARTMENT

3. _____
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12116
SERIAL NO.

6. Study of social criteria for clinical research patients
PROJECT OR ACTIVITY TITLE

7. Social Service Department
PRINICPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. _____
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Objectives:

To identify social factors which contribute to patients' ability to participate in clinical research projects.

Methods employed:

In February 1954, a preliminary schedule was prepared to elicit patients' attitudes about participation in the Clinical Center's research program.

In extending the study of attitudes of patients coming to the Clinical Center, the Social Service Department has developed the following design:

1. To arrive at working definitions of the "cooperative" and "non-cooperative" research patient by interviewing clinical administrators, clinical investigators, supervising nurses and other professional personnel to obtain their opinions of how such patients can be distinguished. It is not anticipated that these definitions will be absolutes, but it is hoped that they will be usable as operational definitions.

2. To use the definitions arrived at as a basis for the clinical investigator's referral of study patients to Social Service. We then hope to identify the significant social factors which differentiate the "cooperative" from the "non-cooperative" patient.

Study Material:

The thirty patients included in the study were from all Institutes except the National Institute of Dental Research and the National Institute of Mental Health. (The former has no inpatients. Patients from the latter Institute were not included, since interviews with them did not lend themselves to this particular study).

The second and present phase of the study comprises interviews with thirty-two professional staff members including administrators, clinical directors, clinical investigators, and nursing supervisors.

The patient material necessary for the third phase of the study has not as yet been determined.

Preliminary Findings during the year:

1. The patients' ideas of what the Clinical Center would be like prior to their coming were predominantly negative. After their arrival, their negative expressions were overwhelmingly reversed to positive statements regarding the helpfulness of the doctors, nurses, and other staff members.

2. The patients' understanding of the research emphasis, even when explained by literature and the physician, tends to be obscured by their expectation of treatment.

3. Strong factors in motivating patients to come were their confidence in their referring physician and their families' encouragement. Over 75% of the patients had social problems or worries before coming here.

Significance to the Clinical Center and Social Service Research:

There are indications that identification of social factors significant to the patient's ability to remain for the duration of the project will be an important aid in establishing predictability about those patients who will remain and who will cooperate in carrying out procedures required by the research project.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Professional Services Departments — LABORATORY, BRANCH OR DEPARTMENT
3. Anesthesiology Department — SECTION
4. _____ — LOCATION(IF OTHER THAN BETH.)
5. 12122 — SERIAL NO.
6. Anesthesiology Department — PROJECT OR ACTIVITY TITLE
7. C. L. Hebert, M.D. — PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY
8. J. W. Severinghaus, M. D., C. A. Nelson, Jr., M. D., F. Villari, (Inhalation Therapy) — OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS
9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Project:

Anesthesiology Department, Clinical Center

A. Objectives:

The primary objective of the Anesthesiology Department has been to provide safe, effective anesthesia and supportive therapy for patients undergoing major surgical procedures by the surgical services of the several Institutes. This sphere of activity includes the assignment of anesthesiologists to "standby" duties during certain diagnostic procedures not requiring anesthesia, but where circulatory and respiratory depressions of an emergency nature are anticipated. Our second main objective has been to provide for the utilization of all types of inhalation therapy in the care of Clinical Center patients by making available the services of a trained inhalation therapist, together with appropriate apparatus and medical gases necessary to carry out inhalation treatments.

Research objectives have been necessarily of a secondary nature because of our efforts to give Clinical Center patients undergoing surgery the best anesthesiological management at our command. We have participated as members of the Operating Room team in the surgical research procedures of several of the Institutes, particularly NCI, NHI, and NINDB. One member of our staff, however, has devoted almost full time to research problems under the auspices of NHI.

B. Methods employed:

All currently acceptable agents and techniques used in the practice of anesthesiology have been employed. Information gleamed from consultations with local specialists, attendance at National meetings of anesthesiology societies and current literature pertaining to anesthesiology and related fields have been utilized in the management of our clinical problems. Techniques involving the artificial lowering of blood pressure and body temperature have been used when it was felt such procedures would improve the chances for a successful outcome.

C. Patient material:

Patients coming under our care have been referred to us for preanesthetic evaluation prior to being scheduled for surgery in order to allow for preoperative consultation with the patient's attending physician and the responsible surgeon. Patients receiving inhalation therapy have such treatments prescribed by their physician, with our representative supplying the necessary equipment and instructions to nursing personnel.

D. Numbers and kinds of major services rendered:

These data are summarized in Tables I and II. 350 major anesthesiological procedures were carried out during the year on patients from the several Institutes listed in Table I. It is significant to note that the duration of anesthesia and surgery was in excess of two hours in over half (57 percent) of the procedures carried out at the Clinical Center, and, in excess of three hours in 35 percent of the cases. These observations are in marked contrast to the situation prevailing at hospitals where the usual types of surgical treatment are accomplished without emphasis on research aspects of the disease with which the patient is afflicted.

In addition certain diagnostic procedures, such as catheterization of the heart chambers, required the presence of an anesthesiologist in 49 instances for a total of 90 hours.

The Recovery Room adjacent to the main Operating Suite was utilized for the care of 72 patients in the immediate postanesthesia-postoperative period. Nursing care was provided by the nurses from the Surgical Nursing Service or the patient's ward, the number of patients did not warrant the employment of additional personnel for this specific purpose.

Table II summarizes the numbers and types of inhalation therapy received by patients in the several Institutes. Because it is manifestly impossible for our single inhalation therapist to be present at all times during which inhalation treatments are being administered, instruction of patient care personnel in the use of the most commonly employed oxygen administration apparatus and suction equipment used at the bedside has been an important phase of activity, as summarized in Table II.

E. Major problems encountered:

The only problem with which we have been faced is that of providing anesthesia personnel to carry out operative schedules as they are planned by the several surgical services. It has been impossible, because of governmental pay scales, to recruit anesthesiologists to meet the increasing surgical load resulting from the expansion of the programs of the Institutes. Many of the procedures performed at the Clinical Center are of such nature that the services of two anesthetists are often required for a single operative procedure. In order to alleviate this situation we have engaged the services of an additional consultant and have employed a qualified nurse anesthetist to assist us in our work.

F. Important progress or improvements achieved:

During the past year we have attempted to fulfill the demands placed upon us by the three major surgical services of the Clinical Center. We feel that we have been successful in carrying out the objectives which have been outlined above.

G. Significance of activities to clinical research program:

It is obvious that the anesthesiological care for patients undergoing surgical procedures is an integral part of any research program such as those carried out by NCI, NHI, and NINDB. In some instances clinical observations have been carried out on our patients during periods of anesthesia and surgery by one of our staff members whose work is referred to under Item 13 of this report. Such observations, of course, have been secondary to the primary purpose of accomplishing surgery for the condition which has brought the patient to this institution.

H. Proposed course of activities during next calendar year:

It is our intention to continue to provide anesthesiological care and inhalation therapy services on a par with the high standards of medical care existing at the Clinical Center. Clinical research activities in collaboration with the several Institutes will be continued as a means of contributing to the improvement of our methods of patient care and the overall purpose of the Clinical Center.

ANESTHESIOLOGY DEPARTMENT
STATISTICAL REPORT
TABLE I
CALENDAR YEAR 1954

*Administration of Anesthesia and Supportive Therapy for Surgical Procedures.

| | Anesthesia Time --- Hours | | | | | | | | | | | | Total No. of Operations | Standbys | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INSTITUTES | -1/2 | -1 | -1 1/2 | -2 | -3 | -4 | -5 | -6 | -7 | -8 | -9 | 9+ | | Pts | Total time |
| CANCER | 7 | 18 | 13 | 12 | 32 | 16 | 16 | 10 | 5 | 1 | | | 130 | 2 | 2 hrs. 45 |
| MENTAL | | 2 | | | | | | | | | | | 2 | | |
| HEART | | 5 | 12 | 10 | 29 | 11 | 8 | | | 1 | 1 | | 77 | 38 | 71 hrs. 33 |
| DENTAL | 1 | | | | | | | | | | | | 1 | | |
| ARTHRITIS | 1 | 5 | 3 | 5 | 1 | 1 | | | | | | | 16 | | |
| MICRO. | 5 | 5 | 4 | 8 | 4 | 2 | 2 | | 1 | | 1 | | 32 | | |
| NEURO. | 2 | 8 | 10 | 15 | 12 | 3 | 6 | 8 | 10 | 8 | 7 | 3 | 92 | 9 | 15 hrs. 43 |
| | | | | | | | | | | | | | | | |
| TOTAL | 16 | 43 | 42 | 50 | 78 | 33 | 32 | 18 | 16 | 10 | 9 | 3 | 350 | 49 | 90 hrs. 01 |

*Anesthesia Time covers only the period beginning with actual induction of anesthesia and ending with the completion of surgery. Time devoted to preanesthetic evaluation of patient, preparation of anesthetic apparatus and materials and immediate postanesthesia management of patient (in operating room, recovery room or patient's room) is not encompassed by these figures.

Of the total number of anesthesiological procedures (350)
199, or 57%, were of more than two hours duration
121, or 35%, were of more than three hours duration
42, or 12%, were carried out for diagnostic procedures done outside main Operating Suite

Anesthesia for surgery on two animals (chimpanzees) was carried out at request of NINDB (4 and 9 hours respectively).

ANESTHESIOLOGY DEPARTMENT
STATISTICAL REPORT

TABLE II - INHALATION THERAPY
CALENDAR YEAR 1954

| | Oxygen tent Therapy | | Oxygen by Nasal Catheter or Mask | | Administration of Gas Mixtures | | | | Aerosol Therapy | | | | Consult-ation Service | Resp. & Rock. Bed | | Equipment Maintained on Standby Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Continuous | | Intermittent | | Continuous | | Intermittent | | | | | | |
| INSTITUTES | Pts | Hours | Pts | Hours | Pts | Hours | Pts | Treatments | Pts | Hours | Pts | Treatments | Cases | Pts | Days | Pts | Days |
| CANCER | 17 | 2065 | 22 | 1482 | | | 2 | 7 | 1 | 26 | 10 | 622 | 1 | | | 21 | 241 |
| MENTAL | | | | | | | | | | | | | | | | | |
| HEART | 23 | 3818 | 26 | 1163 | 4 | 46 | 9 | 237 | 2 | 188 | 15 | 805 | | 5 | 82 | 8 | 80 |
| DENTAL | | | | | | | | | | | | | | | | | |
| ARTHRITIS | 2 | 189 | 9 | 204 | | | | | | | 8 | 265 | | | | 4 | 28½ |
| MICRO. | 11 | 1433 | 19 | 2516 | | | 6 | 124 | 4 | 355 | 6 | 460 | | | | 10 | 208 |
| NEURO. | 4 | 588 | 18 | 2014 | 1 | 2¼ | | | | | | | 4 | 11 | 256 | 3 | 60 |
| | | | | | | | | | | | | | | | | | |
| TOTAL | 57 | 8093 | 94 | 7379 | 5 | 48¼ | 17 | 368 | 7 | 569 | *39 | 2152 | 5 | 16 | 338 | 46 | 617½ |

*14 patients received combined treatments of aerosol and intermittent positive pressure with a Bennett machine.

274 new employees received inhalation therapy instructions averaging 1½ hours each:

| | |
|---|---|
| 200 professional nurses | 7 unit clerks |
| 9 practical nurses | 2 ambulance drivers |
| 54 attendants | 2 guards |

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December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12122
SERIAL NO.

11.
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y. 1955 | $59,900 | 5 | 4 | 9 | 4.5 | 4 | 8.5 | |
| F.Y. 1956 | 71,900 | 6 | 5 | 11 | 5.7 | 4.5 | 10.2 | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Dr. J. W. Severinghaus, a member of the staff of the Anesthesiology Department has been assigned to the Laboratory of Chemical Pharmacology of the NHI for the purpose of conducting research related to anesthesiology. While the majority of Dr. Severinghaus's time is devoted to this research activity, his services as a clinical anesthesiologist are available when needed. Other members of Dr. Severinghaus's group as well as facilities and operating funds for this project are provided by NHI.

14.
IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO(S) IF WITHIN NIH)

A separate report on this project has been submitted.

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December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12122
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

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December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Nutrition Department — LABORATORY, BRANCH OR DEPARTMENT
3. Patient Dietetic Services; Food Production and Cafeteria Services — SECTION
4. — LOCATION (IF OTHER THAN BETH.)
5. 12151 and 12155 — SERIAL NO.

6. Clinical Center, Nutrition Department, Annual Report
PROJECT OR ACTIVITY TITLE

7. Edith A. Jones, Dietitian Director, Chief, Nutrition Department
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Ann Reimer, Chief, Patient Dietetic Services
Margaret Vance, Chief, Food Production and Cafeteria Services
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

I. OBJECTIVES

A. To provide within a given budgetary framework all nutrition services to all patients in the Clinical Center as ordered by the physician in charge of each project.

B. To provide also a food service on a "self-supporting basis" to the personnel engaged in the research activities of the National Institutes of Health as well as provide special arrangements for groups desiring to eat together in group meetings.

II. METHODS EMPLOYED

A. Operated a Main Kitchen approximately 14 hours daily to furnish food needs to all patient areas and to Cafeteria for personnel.

B. Employed decentralized food service throughout the Clinical Center with the use of 9 Floor Kitchens in operation at the end of the year 1954. This included responsibility for total food service including delivery of trays to patients and collecting trays as well as serving morning and afternoon nourishment.

C. Made available technical nutrition service and information to the participating physician when ordered.

4. Two Metabolic Research Kitchen Units were operated throughout the year, providing constant diets to those patients on complete balance studies from the National Heart Institute, the National Institute of Arthritis and Metabolic Diseases, and the National Cancer Institute.

5. A pay cafeteria was operated with food service available 11 hours daily, between the hours 7:30 a.m. and 6:30 p.m. on week-days, and open on holidays and week-ends for three meal hours only.

III. PATIENT MATERIAL

Not applicable.

IV. NUMBERS AND KINDS OF MAJOR SERVICES RENDERED

A. Main Kitchen

From January 1 to December 31, 1954 the Main Kitchen provided cooked food for and distributed food to 9 Floor Kitchen Units and provided raw food to 2 Metabolic Research Kitchen Units for 196,225 patient meals; and also provided food for sale in the Clinical Center Cafeteria for 449,805 customers within the year. (See Table IV for analysis of cafeteria sales.)

B. Of total meals served to patients January 1, 1954 to December 31, 1954: 196,225

Serviced by Institutes, approximately:

21% to NCI
20% to NHI
11% to NMI
16% to NIAMD
13% to NIMH
19% to NINDB

(See attachment, Table I, for tabulation of last six months experience)

C. Modified Diets January 1, 1954 to December 31, 1954:

Of the meals served in the Floor Kitchens (189,137 meals), approximately 36% were modified diets (special). This represents all diets served other than normal, soft, and liquid diets. (See Table II for tabulation of last six months experience.)

D. Weighed Modified Diets Served:

Of the total number of special diets served from the Floor Kitchen Units, the needs for weighed diets by Institutes were as follows:

| | |
|---|---|
| NCI | 50% |
| NHI | 52% |
| NMI | 14% |
| NIAMD | 50% |
| NIMH | 1% |
| NINDB | 1% |

E. Of the total meals served to patients within the year to meet the needs of the Clinical Center:

Approximately: 35% were provided as normal food service,
20% were provided as a therapeutic service,
45% were provided as supporting service to a specific research program.

F. Needs supplied specifically to the Mental Health Program and Patients:

In order to meet program needs of the Mental Health Floors, an essential part is the plan for meal activities other than the typical family style patient meal service. The Nutrition Department provides television lunches, picnic baskets, food packed for "cook-outs," refreshments for birthday parties, popcorn balls, and candy making parties, as well as packed food supplies for camping trips. Within the last six months these activities have averaged 13 per month for two floor areas, or an average of three to four times each week.

G. Formula needs serviced including total needs (orange juice, water, etc.):

This area services an average of seven to twelve patients per day, broken down in the following categories:

2 - 3 babies as supporting service to a specific research program. (These requiring almost daily changes.)

2 - 4 babies as normal food service

3 - 5 patients provided with tube feedings which serve as a therapeutic service as well as a supporting service to a specific research program.

H. Meals served by Research Kitchen Units:

8,612 meals were served as constant diets as a part of balance studies engaged in by National Institute of Arthritis and Metabolic Diseases and National Heart Institute and National Cancer Institute.

This represents approximately 4 percent of the total meals served in the Clinical Center within the year. (See Table III for tabulation of last six months experience.)

I. Patient Instruction:

There are an increasing number of patients being discharged with specific dietary instruction from the various Clinical Center services. This involves approximately 10 percent of the total patients discharged.

Patients seen in Followup Department for dietary instruction amount to approximately 2 - 5 visits per month.

J. Cafeteria Service:

453,805 sales were serviced throughout the year. This has been an increase from an average of 1225 per week-day in January 1954 to 1888 per week-day in December 1954.

The above represents $175,735 collected in receipts for the entire year; an average of $485 per week-day in January 1954 to $740 per week-day in December 1954.

The year has seen a gradual increase in the number of customers serviced on the week-ends. In January the average was 267 on Saturday and Sunday, and in December the average was 433 on Saturday and Sunday.

This year has seen an increase in the average sale from an average sale of 33¢ to 40¢ per sale.

At the end of the fiscal year 1954, the Cafeteria showed a profit of $1,405, representing less than 1% of the total sales of the year.

Summary: The raw food cost in the Cafeteria has ranged from 41 - 46% of the total $1.00 received; and the personnel costs have ranged from 35 - 57% of the total $1.00 received.

Special Groups - Eating arrangements are made and reserved for groups wishing to eat together in the Cafeteria or Hospitality and Snack Shop for business reasons. This averages arrangements for one special group each week day.

V. IMPORTANT PROGRESS OR IMPROVEMENT ACHIEVED

A. The use of the revolving fund for purchase of 180 canned food items was a major step in developing a more concise purchasing procedure for the Nutrition Department.

B. Within this year two additional floor kitchen units have been opened in order to service the needs of the clinical research programs.

C. Additional staff have been added to the two Metabolic units in order to be able to service approximately 6 - 8 balance studies from each of the Metabolic Kitchen Units.

D. Civil Defense Plan for feeding in case of Disaster was drafted for use at Clinical Center.

VI. SIGNIFICANCE OF ACTIVITIES TO THE CLINICAL RESEARCH PROGRAMS

A. The Nutrition Department has provided an essential supporting service to the clinical research programs of each of the Institutes of the National Institutes of Health as well as provided technical nutritional information as needed in these research programs.

B. Essential to accomplishing the clinical research programs is satisfied personnel. It is felt that the food service to personnel is an important adjunct to this.

VII. PROPOSED COURSE OF ACTIVITIES DURING NEXT CALENDAR YEAR

A. Construction of formula room area to house operations that are now on an improvised basis in the 2nd Floor Kitchen Unit and the autoclave located in the Utility Room on the 2E Nursing Unit.

B. Opening of a third Metabolic Research Kitchen Unit to service the National Cancer Institute.

C. Opening of one additional floor kitchen unit.

D. Opening the Hospitality and Snack Shop for extension of services of the National Institutes of Health personnel.

Table I

Meals Served to Patients in Clinical Center

July 1, 1954 - December 31, 1954

| Month | NCI | NHI | NIAMD | NMI | NINDB | NIMH | TOTAL |
|---|---|---|---|---|---|---|---|
| July | 3,399 | 3,756 | 2,761 | 1,938 | 2,869 | 2,098 | 16,821 |
| August | 3,933 | 3,230 | 3,040 | 1,877 | 3,047 | 2,049 | 17,176 |
| September | 3,571 | 3,357 | 2,833 | 1,697 | 3,836 | 2,214 | 17,508 |
| October | 3,202 | 4,069 | 3,186 | 2,036 | 4,763 | 2,196 | 19,452 |
| November | 4,411 | 4,418 | 3,118 | 2,520 | 3,750 | 2,941 | 21,158 |
| December | 4,572 | 4,132 | 2,863 | 2,701 | 3,474 | 3,306 | 21,048 |
| TOTALS | 23,088 | 22,962 | 17,801 | 12,769 | 21,739 | 14,804 | 113,163 |

Table II

Meals Served From Floor Kitchen Units to Patients

July 1954 - December 1954

| Month | No. Floor Kitchen Units | Modified Diets | Normal, Soft and Liquid Meals Served | TOTAL |
|---|---|---|---|---|
| July | 8 | 4,882 | 11,507 | 16,389 |
| August | 8 | 5,398 | 11,313 | 16,711 |
| September | 8 | 6,043 | 10,834 | 16,877 |
| October | 9 | 7,454 | 10,994 | 18,448 |
| November | 9 | 7,850 | 13,266 | 21,116 |
| December | 9 | 8,100 | 12,109 | 20,209 |
| TOTALS | | 39,727 | 70,023 | 109,750 |

Table III

Meals Served by Research Kitchen Units

July 1, 1954 - December 31, 1954

| Month | 9th Wilder Kitchen (Serving NIAMD) | 7th Metabolic Kitchen (Serving NHI and 2 patients to Cancer)** | TOTAL |
|---|---|---|---|
| July | 444 | 343 | 787 |
| August | 459 | 6 | 465 |
| September | 502 | 129 | 631 |
| October | 501 | 493 | 994 |
| November | 439 | 603 | 1,042 |
| December | 204 | 635 | 839 |
| TOTALS | 2,549 | 2,209 | 4,758 |

* During this month the 7th Floor Metabolic Kitchen Unit was closed to provide vacation at one period.

** This began in the last quarter.

Table IV

Cafeteria Sales for 1954

| Month | No. Cafeteria Sales | Cash Receipts | Average Sale |
|---|---|---|---|
| January | 30,435 | $ 11,173 | .33 |
| February | 29,894 | 11,032 | .34 |
| March | 36,502 | 13,692 | .36 |
| April | 34,446 | 13,052 | .35 |
| May | 34,132 | 13,228 | .41 |
| June | 36,938 | 14,440 | .43 |
| July | 37,686 | 15,162 | .43 |
| August | 38,952 | 15,641 | .44 |
| September | 40,390 | 15,997 | .41 |
| October | 43,934 | 17,661 | .38 |
| November | 42,698 | 17,173 | .40 |
| December | 43,798 | 17,477 | .43 |
| TOTAL | 449,805 | $175,728 | |

R.P.C. - 2
December 1954 Analysis of NIH Program Activities

Budget Data Sheet

10. 12151 and 12155
SERIAL NO.

11.
BUDGET DATA:

| | | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | BUDGETED POSITIONS OTHER | BUDGETED POSITIONS TOTAL | MAN YEARS PROF | MAN YEARS OTHER | MAN YEARS TOTAL | PT. DAYS |
|---|---|---|---|---|---|---|---|---|---|
| | F.Y.1955 | $560,000 | 18 | 126 | 144 | 17.0 | 105.0 | 122.0 | |
| 12151 | F.Y.1956 | 755,000 | 27 | 144 | 171 | 24.2 | 131.8 | 156.0 | |
| | F.Y.1955 | 246,000 | 0 | 44 | 44 | 0 | 34.0 | 34.0 | |
| 12153 | F.Y.1956 | 350,000 | 0 | 50 | 50 | 0 | 45.0 | 45.0 | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

1. Chief of Nutrition Department serves on Commissioned Officer Board for dietitians throughout the Public Health Service.

2. Several members of the Nutrition Staff serve each month on a Civil Service panel for rating applications of nonprofessional employees to the Board of Civil Service Examiners.

3. Chief of Nutrition Department acts on Board for making appointments for dietetic internships to the Staten Island Hospital.

4. Chief of Nutrition Department has served on a committee to make recommendations for new standards for examinations to be given for dietitians by the Civil Service Commission.

5. Consultation was given to Medical Services Branch of Indian Bureau in the developing of a job description for Chief Dietitian in this program and also to the United Mine Workers in developing a job description and responsibilities for the dietitians to be recruited for their program.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable.

R.P.C. - 3
December 1954 Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12151 and 12155
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

1. Put your Food Service Program in Writing
The Modern Hospital - November 1954 - Edith A. Jones

2. "Efficiency Starts with Good Planning"
The Modern Hospital, December 1954 - Edith A. Jones

3. Good Planning is a Question of Checking
The Modern Hospital - January 1955 - Edith A. Jones

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

1. The Chief of the Nutrition Department was elected President, The D. C. Dietetic Association for the year 1954 - 1955.

2. The Chief of Patient Dietetic Services was asked to serve as a member of the faculty in a two week Nutrition Refresher Course for hospital dietetics at Michigan State College.

3. Staff Dietitian in Food Production is currently serving as Chairman of the Professional Education Committee of the District of Columbia Dietetic Association.

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December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. The Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Professional Services Departments
LABORATORY, BRANCH OR DEPARTMENT

3. Medical Record Department
Admissions & Followup Dept.
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12117 and 12133
SERIAL NO

6. Organization and administration of Medical Record Department and Admissions and Followup Services.
PROJECT OR ACTIVITY TITLE

7. Chief, Medical Record Department - Miss Olive G. Johnson.
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8.
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

Chief, Research and Statistics Section - Miss Elaine Lynch

Chief, Medical Record Operations Section - Mrs. Esther McKenna

Chief, Medical Transcribing Section - Mrs. Ruth McAfee

Chief Admitting Officer - Mrs. Joan Howe

9. PROJECT DESCRIPTION

Objectives:

The organization and administration of services to meet the need of the administration, clinical, and other professional staff for records and reports, and the admission and followup of patients.

Methods employed:

Four sections have been established: Research and statistics, medical record operations, admissions and followup, and medical transcribing. The first three sections are supervised by graduate registered medical record librarians, the fourth by an employee experienced in supervision and training of typists in medical terminology. Each chief has been delegated responsibility and authority for her section. The attached chart shows the main services given by the department. 1/

1/ See Page 5

Medical Record Committee - Represented by each Institute, this committee meeting monthly has been actively engaged in two functions:

> Coordinating the requirements and varied experience of the several Institutes in maintaining the most appropriate medical record system.
>
> Serving in an advisory capacity to the Record Department.

Outpatient Committee - Organized during 1954, this committee has a representative from each Institute and the Nursing Department. The function of this committee was defined as follows:

> To act as a central advisory board to the administration by determining needs (space, facilities, and personnel) and reviewing procedures for admissions and followup to ascertain that they are in good order and will meet the need of each Institute.
>
> To discuss any problems affecting the research program or patient care.

The in- and outpatient service reports reflect the workload of the Department. There were 1452 admissions during 1954. These patients were interviewed and pertinent identification data recorded. For each admission, a history and physical examination averaging 10-12 pages in length was transcribed and two addressograph plates made. One of these plates containing pertinent identification data of the patient was duplicated on twenty-three cards for use in selected offices and departments. A narrative summary averaging six pages was transcribed for each of the 1326 patients discharged. In addition, 1326 medical records were reviewed, analyzed, and cross-indexed. Twenty-four employees were employed in the Medical Record Department as of the last day of the year.

Administrative statistical reports on patient data are compiled in the department. The increased activity of the Record Department and other departments of the Clinical Center are reflected by comparative data of two six month periods.

| | July-Dec. 1953 | July-Dec. 1954 |
|---|---|---|
| INPATIENTS: | | |
| Number beds activated - July 1 | 26 | 250 |
| Number beds activated - Dec. 31 | 161 | 332 |
| Number of inpatient admissions | 398 | 800 |
| Number discharges (includes deaths) | 307 | 767 |
| Number inpatient bed days | 10,470 | 37,497 |
| Number discharge patient days | 7,364 | 34,259 |
| Average length stay per discharge patient | 23.99 | 44.67 |
| Average daily census | 58.49 | 203.79 |
| Percent occupancy | 63.00 | 71.17 |
| OUTPATIENTS: | | |
| Total patients served | 412 | |
| Total number of visits | 1,341 | |

The administration of Admissions and Followup Department was assigned to the Medical Record Department in June, 1954. Due to the shortage of personnel, planning for organizational changes to coordinate the two areas was delayed until 1955. However, some functions have been combined. A clerk-typist is night clerk for the two departments and during the day a messenger and relief clerk serve both areas. Seven employees were employed in the Admissions and Followup Department at the close of the calendar year.

The Normal Control Program was also assigned to the Medical Record Department in June, 1954 as a part of the admitting function. This service was initiated by the administrative staff of the National Institutes of Health in February, 1954 with the admission of four volunteers from the Brethern Service Center. In June the first volunteers from the Mennonite Central Committee were admitted. At the close of 1954, nine volunteers were in the Clinical Center. Altogether twenty-six men and five women served a total of 2,802 days, or 4% of the total inpatient days Since the demand for normal control patients is greater than the supply, other means of obtaining admissions for an indefinite period have been studied. Representatives of each Institute met periodically with the Chief of the Admissions and Followup Department to review the demand, and to discuss methods of maintaining a supply to meet the need of the investigators.

Major problems encountered: Two problems are major and represent critical areas to the administration of the department.

1. Delay in processing applications for personnel and in recruitment of employees.

2. Delay in processing orders for equipment.

Important progress or improvements achieved: The recruitment of two section chiefs to complete the organization of the four units was accomplished. This relieved the chief of the department of duties that occupied a large percent of her time and could be performed by others.

The use of the IBM cards was started July, 1954 for outpatient statistics. This permits the collection of data that was difficult or time-consuming to obtain by hand.

Institution of program to coordinate the activities of admitting and followup services with those of medical records.

Orientation and training of twelve employees added to medical records and four employees added to admissions and followup.

Reduction of the number of incomplete records by institution of procedures developed by the Medical Record Committee.

Organized and instituted program of weekly lectures by clinical staff on medical subjects for medical transcribing section. Employees of the medical record and admissions and followup departments attend.

R.P.C. - 1 (cont'd.)
December 1954

Proposed course of activities during the next calendar year:

1. Coordination of medical record and admitting and followup departments for procedures as well as the orientation and training of personnel.

2. Institute procedures for installation of "project admitting" from the request for admission through the compilation of final reports required for administrative analysis.

3. Review and analysis of all record and report procedures from first letter inquiring about admission of a patient to indexing medical data in order to determine that best methods have been instituted to meet the need of this research center.

4. Determine need for using IBM equipment on inpatient administrative statistics and for reports on projects and install procedures if indicated.

MEDICAL RECORD COMMITTEE - - - - - MEDICAL RECORD DEPARTMENT - - - - - OUTPATIENT COMMITTEE

## RESEARCH AND STATISTICS

1. Review and analysis of medical records
2. Index
   a. Diagnoses
   b. Manifestations
   c. Operations
   d. Physicians
   e. Procedures
   f. Project
   g. Therapy
3. Routine statistical reports
   a. Daily census
   b. Monthly report on in- and outpatient service
4. Special statistical report (on request)
5. Special research studies
6. Consultant to department heads on departmental reports

## MEDICAL RECORD OPERATIONS

1. Control room
   a. Patients' index
   b. Unit number control
   c. Releast and receipt of medical records
   d. Addressograph operation
   e. Duplicating and photostat service
2. Insurance, abstract service, correspondence
3. Central NIH file on all communications involving prospective patients
4. Consultant to department heads on needs for departmental records and procedures

## MEDICAL RECORD TRANSCRIBING

1. General medical transcription
2. Secretarial service
3. Followup dictation
4. Letters to referring physicians
5. Training program for medical transcribers

## ADMISSIONS AND FOLLOWUP

1. Admission of patients to in- and outpatient service
2. Receptionist to outpatients
3. Maintains central appointment system
4. Maintains followup file for outpatients
5. Review and process of medical record following outpatient visit

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12117 and 12133
SERIAL NO.

11.
BUDGET DATA:

| | | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|---|
| 12117 | | $ 64,300 | 2 | 9 | 11 | 2. | 7.4 | 9.4 | |
| 12133 | F.Y.1955 | 99,000 | 3 | 23 | 26 | 2.8 | 20.9 | 23.7 | |
| 12117 | | 80,000 | 2 | 9 | 11 | 2 | 8.7 | 10.7 | |
| 12133 | F.Y.1956 | 113,400 | 3 | 27 | 30 | 3 | 25.5 | 28.5 | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Cooperated with Division of Public Health Methods, Office of the Surgeon General, Public Health Service on a study of the resources of medical record librarians.

Research number of project: OSG - PHM - 18.

PHS Publication #263 - Section 6, Health Manpower Source Book: Medical Record Librarians.

The Chief of the Medical Record Department is one of three author of the above and served as Chairman of the Survey Committee of the American Association of Medical Record Librarians. This forty-three page manuscript to be published in January, 1955 is the result of an analysis of a survey of this profession conducted in 1953. The information cover. the number and distribution of medical record librarians, and the educational status, professional education, registration, certification, Association membership, personnel characteristics, hospital employment, and salary.

R.P.C. - 2 (concl'd)
December 1954

In addition, the Chief of the Medical Record Department was senior author of two articles presenting preliminary results of the survey in the Journal of the American Association of Medical Record Librarians.

June 1954 - Preview of Results from a Survey of Medical Record Librarians

August 1954 - Educational Level of Medical Record Librarians

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSE WHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12117 and 12133
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

The Chief of the Medical Record Department prepared a paper entitled "Organization of Records and Reports in a Research Institution--Criteria and Methods Used" for presentation at the annual meeting of the American Association of Medical Record Librarians in October 1954. This paper will be published in the Journal of the Association early in 1955.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Professional Services Department
LABORATORY, BRANCH OR DEPARTMENT

3. Diagnostic X-ray Department
SECTION

4. [illegible]
LOCATION (IF OTHER THAN BETH)

5. 12124
SERIAL NO.

6. Diagnostic X-ray Department
PROJECT OR ACTIVITY TITLE

7. Dr. Theodore F. Hilbish
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Dr. Eugene L. Bronstein
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Project:

Diagnostic X-ray Department, Clinical Center

Objectives:

The objective of this Department is to provide a complete diagnostic radiological service for the various Institutes of the National Institutes of Health.

Methods Employed:

In order to accomplish this objective, X-ray equipment was procured and trained personnel were employed. All types of radiographic examinatione were performed during the calendar year 1954.

Number of Kinds of Major Services Rendered:

The following table (Table I) outlines, but does not indicate, the type of studies completed. As might be expected in the Clinical Center, many special procedures were undertaken. Practically every type of diagnostic X-ray examination known in the world was performed in the Diagnostic X-ray Department during the calendar year 1954. Proportionately many more special radiographic procedures are performed in the Clinical Center than in the usual hospital. For example, 194 pneumoencephalograms were completed during the calendar year 1954. This represents many times the number of such procedures normally accomplished in the average X-ray department.

In addition to patient studies, the Diagnostic X-ray Department provided a radiographic service for the various Institutes involving animal X-ray examinations. Approximately 650 animal radiographs were consummated in the calendar year 1954. Examinations included films on many different types of animals from mice to chimpanzees, cows and goats.

Major Problems Encountered:

The most difficult problem arising relative to operation of the Diagnostic X-ray Department involved the procurement of suitable trained personnel. Compensation provided for radiologists in the Government is by no means competitive with private practice. Various technical problems encountered during the calendar year were satisfactorily solved and the operation of the Department was not seriously impeded.

Important Progress Achieved:

Several new types of radiographic procedures were undertaken during the calendar year 1954. A new radiographic method of serial ureterography was developed within the Department. Increasing demands relative to quantity and quality of X-ray procedures were successfully met in conjunction with the expanding clinical research activities at the Clinical Center.

Significance to Clinical Research Program:

Many clinical research projects were monitored and guided by radiographic control. Baseline X-ray studies were obtained at the onset of research projects and the response to the various types of therapy were determined by periodic X-ray examinations. Many types of clinical and pathological abnormalities were radiographically demonstrated during the calendar year. Without radiographic control, many of the clinical research activities could not be successfully consummated. For example, pulmonary angiograms were performed periodically to determine the response of neoplasms within the lung fields to the instillation of drugs into the pulmonary vessels by means of catheters. These catheters were inserted into the pulmonary vessels at thoracotomy. The response of many of the arthritic patients to some of the newer drugs was correlated by radiographic control.

Proposed Course of Project:

As the clinical research activities of the hospital increase, the Diagnostic X-ray Department facilities will likewise be expanded. The diversity of investigative studies continuously requires adaptation of X-ray facilities for special projects. Toward this end, additional personnel and equipment will be procured as the needs arise. It is the purpose of this Department to be prepared to perform any type of diagnostic X-ray procedure requested by a clinical research investigator.

Table 1.

NUMBER OF EXAMINATIONS

(January 1954 through December 1954)

| MONTH | INSTITUTE (BY TYPE OF PATIENT) | | | | | | | | | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N C I | | N H I | | N M I | | N I A M D | | N I M H | | N I N D B | | N I D R | | E H S | | |
| | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | In-pt. | Out-pt. | |
| JAN. | 154 | 29 | 73 | 18 | 43 | 61 | 37 | 7 | 11 | - | 85 | 66 | - | 13 | - | 243 | 840 |
| FEB. | 171 | 22 | 97 | 20 | 106 | 34 | 104 | 2 | 5 | - | 46 | 79 | - | 4 | - | 395 | 1085 |
| MAR. | 230 | 32 | 120 | 26 | 116 | 36 | 132 | 3 | 6 | - | 98 | 185 | - | 7 | - | 322 | 1313 |
| APR. | 198 | 21 | 83 | 18 | 65 | 35 | 94 | 12 | 5 | 3 | 68 | 124 | - | 13 | - | 359 | 1098 |
| MAY | 170 | 15 | 101 | 17 | 98 | 25 | 92 | 28 | 4 | - | 106 | 121 | - | 5 | - | 326 | 1178 |
| JUN. | 178 | 11 | 115 | 13 | 121 | 37 | 82 | 2 | 4 | - | 149 | 200 | - | 8 | - | 299 | 1219 |
| JUL. | 214 | 47 | 127 | 12 | 122 | 22 | 171 | 3 | 17 | - | 136 | 73 | - | 15 | - | 296 | 1255 |
| AUG. | 224 | 41 | 109 | 16 | 109 | 72 | 150 | 10 | 15 | - | 112 | 112 | - | 1 | - | 269 | 1240 |
| SEP. | 200 | 57 | 121 | 32 | 77 | 29 | 120 | 26 | 5 | - | 135 | 110 | - | - | - | 391 | 1303 |
| OCT. | 249 | 89 | 207 | 31 | 137 | 32 | 127 | 12 | 5 | - | 136 | 148 | - | 13 | - | 297 | 1490 |
| NOV. | 311 | 76 | 135 | 14 | 166 | 58 | 155 | 30 | 25 | 4 | 149 | 102 | - | 17 | - | 323 | 1625 |
| DEC. | 274 | 74 | 163 | 17 | 162 | 43 | 220 | 72 | 11 | 1 | 115 | 40 | - | 7 | - | 322 | 1521 |
| TOTAL | 2573 | 514 | 1511 | 234 | 1322 | 464 | 1484 | 214 | 113 | 8 | 1335 | 1360 | - | 103 | - | 3912 | 15167 |

TABLE 2

NUMBER OF X-RAY EXAMINATIONS

| INST. | Type of Patients | | TOTAL |
|---|---|---|---|
| | In | Out | |
| NCI | 2573 | 514 | 3087 |
| NHI | 1511 | 234 | 1745 |
| NMI | 1322 | 484 | 1806 |
| NIAMD | 1484 | 214 | 1698 |
| NIMH | 113 | 8 | 121 |
| NINDB | 1335 | 1360 | 2695 |
| NIDR | -- | 103 | 103 |
| EHS | -- | -- | 3912 |
| TOTAL | 8338 | 2917 | 15167 |

Diagnostic X-ray Department

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12124
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y. 1955 | $86,000 | 3 | 7 | 20 | 2.5 | 14.4 | 16.9 | |
| F.Y. 1956 | 154,000 | 4 | 20 | 24 | 4 | 18.3 | 22.3 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS. PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

The Diagnostic X-ray Department instituted a cooperative research study in conjunction with Winthrop Stearns Pharmaceutical Company and the Mallinckrodt Chemical Company directed toward the evaluation of contrast media for intravenous pyelography. There are three products involved in this study, i.e., 50 and 70 percent Urokon and 30 percent Hypaque. The first two products are available commercially but Hypaque is still available only for research purposes. The objective of this study is to determine which of these drugs is most suitable from the standpoint of technical quality of films and from lack of patient reaction. These products are provided by the pharmaceutical companies mentioned without cost to the Government.

The Diagnostic X-ray Department has provided a film reading service for the National Cancer Institute and the National Microbiological Institute. The service has involved the reading of outside films taken in various areas of the country. Specifically, the cancer films (approximately 1600) concerned a research study on uranium miners. The Microbiological Institute films involved a study on respiratory viruses.

A cooperative project involving the development of serial ureterography was undertaken in conjunction with the National Cancer Institute. A method of radiographic evaluation of the ureters for subtle pathological changes was developed.

The Diagnostic X-ray Department entered contractual relationships with a local company for reclaiming silver from the X-ray processing tanks. The silver is collected by electroplating methods and sold commercially. Fifty percent of the money obtained is refunded to the General Fund of the Treasury Department.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not Applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12124
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Congenital Mitral Stenosis; Roentgen Study of its Manifestations, by T. F. Hilbish, M.D. and Robert N. Cooley, M.D., accepted for publication by THE AMERICAN JOURNAL OF ROENTGENOLOGY, RADIUM THERAPY AND NUCLEAR MED.

Recent Trends in Diagnostic Radiology, by T. F. Hilbish, M.D., accepted for publication by the MARYLAND STATE MEDICAL JOURNAL.

Developments in Diagnostic Radiology, by T. F. Hilbish, M.D., published in Vol. 69, No. 11, November 1954 issue of PUBLIC HEALTH REPORTS.

Serial Ureterography, A Method of Investigation, by William H. Plante, R. T., published in the January 1955 issue of THE X-RAY TECHNICIAN, Vol. 26, No. 4.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not Applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Professional Services Department
LABORATORY, BRANCH OR DEPARTMENT

3. Clinical Pathology
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12126
SERIAL NO.

6. Department of Clinical Pathology
PROJECT OR ACTIVITY TITLE

7. George Z. Williams, M. D., Chief
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Hiroshi Nishi, M.S; Rose Lieberman, M.S. (NMI-part time)
George Brecher, M.D.; Elizabeth Frame, Ph.D; Arthur Ness, Ph.D;
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Objectives:

The Department of Clinical Pathology, Clinical Center, is organized to provide consultatinn and laboratory services of research precision for patient care in the areas of hematology, clinical chemistry, microbiology, and special diagnostic procedures. In addition, this department provides such laboratory procedures as it is equipped to perform for research purposes on Clinical Center patients whenever such provision by centralization of facilities and trained personnel makes for economy.

Methods:

The standard laboratory test procedures have been modified to increase precision and reproducibility in many of the laboratory areas and include control and check practices to avoid error. A special control laboratory for chemical procedures has improved the blood protein, uric acid, and cholesterol methods, and the serum iron determination procedure.

Services:

The appended organization chart depicts the laboratory divisions and functions of the department and the assigned personnel. During the calendar year of 1954, 91,660 laboratory test procedures were performed and reported on an average census of 178 patients in the 6 Institutes for a total of 43,748 patient-work-days. The accompanying chart and table depict the rate of increase as well as the absolute levels of the test procedures performed and relates them to the average patient census for each month of the calendar year and the number of patient-work-days. An average of 2.1 tests per patient-work-day were done and increased

progressively during the year. It is particularly notable that the increase of test procedures was much more rapid than the concommitant increase in patients.

The major problems during the present year were caused by the disporportionate workload in relation to the available technical staff. Recruiting of technicians has been difficult and slow due to involved recruiting and clearance requirements. Consequently, the activation of new beds, increase of patient census, and the rapid increase of test procedure volume has consistently overloaded the technicians on duty. The optimum staffing is represented by an average load of 15 test-procedures per day per technician. During 1954, the load for technician per day has fluctuated between 19 and 29, rising to 26.5 and 25 during the last 2 months. Under these circumstances, there is no time for institution of new tests as requested or improvement of existing procedures. Advanced instruction of technicians is impossible. At times of peak loads, such as the day after holidays and Mondays, or when several technicians are sick, the day's work cannot be completed in spite of utilizing much overtime. The position of Chief of the Microbiology Service has not been filled as yet, although two outstanding medical microbiologists were invited. It is considered preferable to continue temporarily with an acting chief and the valuable assistance of NMI rather than appoint a person lacking both clinical and research experience. Such well-qualified professional people are difficult to attract to government service.

Progress:

During the past calendar year, several improvements in streamlining and shortening test procedures have been instituted, chiefly through the efforts of the chemical control laboratory under Dr. Ness. The organization of the individual laboratories has been modified to increase efficiency and to save the time and motions of the technicians. Some procedures have been consolidated into groups and the examination of all specimens is accomplished by grouping them into large batches for each analytical procedure. Continuous efforts are made to orient the Clinical Center professional staff to submit all specimens before 9:00 a.m. daily in order to facilitate more efficient operation of the laboratories and completion and communication of the results back to the nursing units by 5:30 p.m. We are studying mechanical and electronic methods of blood cell counting to increase the capacity of the hematology laboratory. Other methods for streamlining chemical procedures are under study, such as automatic titrating systems to reduce man hours per test.

Significance of the Activities of the Department of Clinical Pathology to Clinical Research Program:

The diagnostic laboratory procedures and followup evaluation of patients by chemical, hematological, and microbiological procedures is basic to all clinical research. It is to be expected that the proper care of research patients will require much more than the customary laboratory examinations. The division of so-called patient-care laboratory procedures and research laboratory procedures is impossible to apply in the daily practice of a research hospital and would

necessarily be arbitrary if any such categorical divisions were utilized in selecting the work to be done in this department. Furthermore, when a patient is under treatment by a new procedure, it is to the best interests of the patient and mandatory for his proper care that repeated and pertinent laboratory tests be done to avoid unexpected or hazardous results. This laboratory data is of considerable importance in proper evaluation of his research study. Analysis reveals that the amount of clinical pathology required depends considerably on the type of clinical research being done as tabulated below:

Average Monthly Test-Procedure Volume by Patient Categories

| | |
|---|---|
| Cancer | 59 |
| Metabolic | 42 |
| Heart | 42 |
| Microbiological | 64 |
| Neurological | 31 |
| Mental | 4 |

Proposed Activities During the Next Calendar Year:

The objectives of this department are such that our services will be required as long as the Clinical Center operates for clinical research. In addition, specific objectives include: more streamlining of the laboratory procedures to increase efficiency and accuracy; increase of recruiting in order to fill the vacancies in the staff and make possible additional laboratory procedures which are frequently requested; and advanced training of the technical staff for more accurate work. Work will be continued on developing better methods in hematology, microbiology, and chemistry. The laboratories of the followup department will be opened and staffed to provide immediate laboratory services to patients in that area. A specialty resident training program has been organized and it is anticipated that residents will be appointed for the year beginning July 1, 1955 to train in clinical pathology for 1, 2, and 3 year periods.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12126
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y.1955 | $273,000 | 9 | 37 | 46 | 8.7 | 31.5 | 40.2 | |
| F.Y.1956 | 369,000 | 10 | 63 | 73 | 9.7 | 49.0 | 58.7 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

NCI, (research project of Chief - George Z. Williams Serial No. )
Unit No.
NMI, (animal inoculation facilities and assistance)

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHER IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12126
SERIAL NO.

LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Office of Director, NIH — LABORATORY, BRANCH OR DEPARTMENT
3. Employee Health Service Branch — SECTION
4. _____ — LOCATION (IF OTHER THAN BETH.,)
5. 12171 — SERIAL NO
6. Employee Health — PROJECT OR ACTIVITY TITLE
7. John M. Lynch, M.D., Chief — PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY
8. Frances S. Wolford, Head Nurse — OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION

Objectives:

The Employee Health Service, as the name implies, is a service program designed to meet two main objectives:

1. The maintenance of the health of all N.I.H. employees at the highest possible level through the provision of preventive medical services, which in turn is reflected in reduced sickness absenteeism and increased productivity.

2. The prevention and control of occupational disease; as well as the treatment of those occupational diseases and injuries which do occur in spite of preventive efforts.

Methods Employed:

Recognized techniques, as accepted for years by progressive private industries, are utilized in N.I.H.'s program of Occupational or Industrial Medicine. Every opportunity, from the initial pre-placement physical examination to the routine visit for a minor complaint, is used to provide sound health guidance and an opportunity for early case finding. Tuberculosis, diabetes, cancer, heart disease and mental illness for example, have repeatedly been discovered when cure and/or control was possible. Close collaboration has existed between the Personnel Branch, Administrative offices of the Institutes,

Safety Officer, and Sanitary Engineer's offices in the solution of a wide variety of problems involving interpersonal relations, hazardous work conditions, and occupational disease exposures. Referrals for non work-related conditions have been consistently made to personal physicians and other community resources; and a strong bond of mutual understanding and friendship exists between the Employee Health Service and the community private physicians.

Numbers and Kinds of Major Services Rendered:

| | |
|---|---|
| Preemployment physical examination | 1128 |
| Visits for Occupational injuries and diseases | 2450 |
| Total visits | 19479 |
| Immunizations | 2800 |
| Referrals to personal physicians | 5026 |

Major Problems:

1. Adjustment of greatly increased work load to size of Employee Health Service staff.

2. Continued relative low level of understanding by many administrative and operating personnel of the preventive medical nature of Employee Health Service objectives and available services.

Important Progress or Improvement Achieved:

1. Improvement of clerical and administrative procedures to allow increased time for provision of direct services to employee and management.

2. Institution of various techniques to elevate level of understanding of program: such as, the regular column "Employees Health Notes" in the N.I.H. Record.

3. Essential completion of reorientation of the Employee Health Service program from the limited treatment type of program of years past to the preventive medical - health maintenance type of the present and future.

Proposed Course of Activities During the Next Calendar Year:

Greater attention to the evaluation and control of occupational hazards will be given during the next year, particularly those related to patient care, and the infectious diseases. Increased emphasis will be placed on prevention in all its aspects as it may be applied to Occupational Medicine. Initiating long term projects, the research potential of Occupational Medicine will be evaluated with the aim of understanding better the complex influences which arise out of the working environment to affect physical and mental health.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12171
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y.1955 | $49,100 | 3 | 7 | 10 | 3.0 | 6.4 | 9.4 | |
| F.Y.1956 | 50,300 | 3 | 7 | 10 | 3.0 | 6.7 | 9.7 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

The Employee Health Service has been a source of Clinical material for many study projects; including infectious, heart, rheumatic, neurological, and cancer clinical projects. In the field of dermatology alone, 412 different employees have been screened for study purposes by the dermatological section of the Cancer Institute.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable.

P.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12171
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

John M. Lynch, M.D.

Member, Planning Committee, 1955 A.M.A. Congress on Industrial Health

Vice-Chairman, Montgomery County Committee on Alcohol Studies

Elected to membership, American Academy of Occupational Medicine

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. The Pharmacy Department — LABORATORY, BRANCH OR DEPARTMENT

3. Pharmacy Sterile Supply Service — SECTION
4. — LOCATION (IF OTHER THAN BETH.)
5. 12130 — SERIAL NO.

6. Pharmacy and Sterile Supply Service
PROJECT OR ACTIVITY TITLE

7. Mr. Milton W. Skolaut, Chief
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Dr. John A. Scigliano, Assistant Chief
Mr. Joseph N. Salvino, Chief, Sterile Supply Service
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Objectives:

To supply to the clinical research teams all necessary pharmaceuticals and sterile supplies. To provide consultation and advice on problems encountered and produce or process new developmental forms of dosages, oral or injectable, and trays or equipment essential to the successful completion of a study.

Methods Employed:

A coordination of pharmaceutical and sterile supply needs through one office. By keeping current the Department catalog of items available by issuing revisions and Pharmacy Bulletins. Advisory activities of the Pharmacy Committee and Nursing Procedure Committee have been useful. Working closely with the Supply Management Branch has improved the procurement and delivery of supplies.

Major Services Rendered:

Total number of Department Issues - 665,922

| Pharmacy Service Issues | |
|---|---|
| Prescriptions | 4,573 |
| Other Items | 82,921 |
| Total | 87,494 |

Sterile Supply Service Issues

| | |
|---|---|
| Sterile | 426,715 |
| Clean | 151,713 |
| Total | 578,428 |

Number of Individual Requests filled to issue above items

15,259

The Pharmacy issues included many preparations which have been extremely time consuming. Special capsules, dermatological preparations, injectables, etc., are shown as a unit but one request may require the services of a professional person up to four hours. Number of items of work performed per professional person is meaningless in this environment but what is important is the end product supplied to a research team of physicians and scientists.

Special processing of trays, dressings and other sterile supplies has increased during the past year. This service is valuable since it releases professional persons in the patient care area to perform other tasks. This is reflected further in the number of trays available from a centralized area. Approximately 100 different clean and sterile trays have been available, which is many more than any other type of patient care facility offers.

The Department has acted as a clearing house for research and patient items which are not too closely connected with the primary function. Drug and chemical information has been supplied to all institute groups whether they are interested in basic research or clinical care.

Items such as orthopedic supplies and eye glasses have been procured through the Department office.

Problems Encountered:

A serious problem was the training of personnel to work in a research environment with its many different aspects. This is being overcome nicely.

Extreme demands have been placed on the Department for emergency procurement of supplies without being able to orderly follow the procedures set up. Various methods have been established with the Supply Management Branch whereby this may be speeded up.

Better advance planning would relieve this problem and allow better and more efficient service with the personnel available.

Significance to Clinical Research Program:

The Department has furnished supplies when they were needed with but few exceptions. By giving advice and consultation and offering more improved service during the past year the clinical programs have been able to move faster towards completion.

Proposed Course:

As more personnel are added it is planned that additional services be offered which are not available to date. The most important function to be added in the Sterile Supply Service will be the sorting and packing of all surgery supplies with the exception of instruments. When personnel become available this duty will be transferred from the Surgery Nursing Staff to our Department.

A training manual for non-professional personnel in Sterile Supplies will be started this year. When completed it should make the task of training new personnel much easier and faster.

Plans are being made to participate more fully in the preparation of radioactive materials for direct patient use.

More product development work will be undertaken by instituting a Special Services Section along with more quality and sterility controls. Several pilot studies for drugs and sterile supply handling will be instituted and if profitable they will be put into effect.

Exhibits by drug and surgical suppliers and manufacturers will be continued so as to assist professional clinical teams to keep abreast of newer developments.

Closer cooperation with all Departments is planned so that the entire service to the clinical area may be improved.

R.F.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12130
SERIAL NO.

11.
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y. 1955 | $341,000 | 7 | 23 | 30 | 5.5 | 20.1 | 25.6 | |
| F.Y. 1956 | 491,000 | 10 | 36 | 46 | 8.5 | 29.9 | 38.4 | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S (ITEM 10)

American National Red Cross Gray Ladies Volunteers prepared and packaged dressings and supplies.

14.
IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable.

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12130
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

"The Clinical Center Pharmacy," by John A. Trautman, M.D. and Milton W. Skolaut, Journal of the American Pharmaceutical Association, Practical Edition, May 1954.

"The Central Sterile Supply of a Pharmacy Department," by Milton W. Skolaut, J. A. Scigliano and J. N. Salvino, The Bulletin, American Society of Hospital Pharmacists, March-April 1954.

"Ophthalmic Medication," Part I, by J. A. Scigliano and M. W. Skolaut, The Bulletin, American Society of Hospital Pharmacists, Jan.-Feb., 1954.

Accepted for publication: "A Used Needle Return System," Hospitals.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Mr. Milton W. Skolaut is Vice-President elect of the American Society of Hospital Pharmacists, and Chairman, Committee on Central Sterile Supply.

Dr. John A. Scigliano is Chairman, Committee on Minimum Standards, American Society of Hospital Pharmacists.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Professional Services Department — LABORATORY, BRANCH OR DEPARTMENT
3. Rehabilitation Dept. — SECTION
4. — LOCATION (IF OTHER THAN BETH.)
5. 12127 — SERIAL NO.
6. Physical Therapy Service; Occupational Therapy Service; other rehabilitation services — PROJECT OR ACTIVITY TITLE
7. Tillye Cornman, M.D. — PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY
8. Vida Jo Niebuhr, Chief Therapist, Physical Therapy
Mary B. Beach, Chief Therapist, Occupational Therapy — OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

The activities of the Department of Rehabilitation may be grouped under three headings:

1. Physical Therapy Service
2. Occupational Therapy Service
3. Other rehabilitation measures.

Most of the progress was made in the first two divisions, and detailed reports follow.

Methods to improve our total rehabilitative care are under discussion and policies and ideas will be presented at a later date.

At the present time, there is a full-time Physiatrist, Acting Chief of the Rehabilitation Department, present since December 1, 1954, and a consulting Physiatrist, Dr. A. Bernice Clark. The latter spent three months, April to July, 1954 in re-organizing the Department, and since November, 1954 has served as Consultant during twice-monthly visits.

REHABILITATION DEPARTMENT

Physical Therapy Service

1. Treatment Summary, statistical:

| | Number of Patients Treated | Number of Patient Visits | Number of Treatments |
|---|---|---|---|
| January | 25 | 335 | 651 |
| February | 24 | 282 | 547 |
| March | 41 | 500 | 792 |
| April | 39 | 480 | 907 |
| May | 50 | 525 | 961 |
| June | 32 | 537 | 959 |
| July | 49 | 660 | 1201 |
| August | 61 | 759 | 1498 |
| September | 67 | 704 | 1599 |
| October | 73 | 826 | 1889 |
| November | 69 | 795 | 2011 |
| December | 74 | 745 | 1876 |

2. New appointments to the Physical Therapy staff included: One Secretary-Typist; One Physical Therapy aide; one staff Physical Therapist; and. Chief, Physical Therapy Service.

3. Construction matters of interest during the year included: procurement and installation of an electric hoist for the Hubbard Tank; replacement of two whirlpool baths; completion of plans for the therapeutic pool; and. completion of plans for partitioning of space to be used as a room for activities of daily living.

4. Miscellaneous items of interest during the year included: receipt of additional equipment as the needs of the Service required; participation of staff personnel in medical and nursing staff conferences; bacterial analysis to determine best media for cleaning the Hubbard Tank; review and revision of medical record forms; development of Gray Lady Service; development of service and liaison with local merchants or representatives for wheel chair, brace, and shoe service to patients; and inauguration in August of weekly staff meetings.

Occupational Therapy Service

This year has seen the development and enlarging of the Occupational Therapy Service to better meet the specific treatment and recreational needs of the patients. With the move of the Service into part of the Occupational Therapy space on 4-D, the employment of a Chief, Occupational Therapy, in July, a recreational person for the summer, and two additional therapists during the year, the program has been able to expand. In May treatment for bed patients and a program for children were started. A workshop period was also begun for patients from all Institutes.

PATIENTS SEEN INDIVIDUALLY BY OCCUPATIONAL THERAPISTS

| | Number of Patients | Number of Visits | Hours of Treatment |
|---|---|---|---|
| January | 11 | 33 | 95 |
| February | 13 | 86 | 231 |
| March | 32 | 109 | 303 |
| April | 53 | 79 | 116 |
| May | 97 | 344 | 284 |
| June | 73 | 467 | 371 |
| July | 112 | 574 | 462 |
| August | 143 | 756 | 422 |
| September | 130 | 1010 | 491 |
| October | 109 | 811 | 434 |
| November | 119 | 832 | 992 |
| December | 111 | 666 | 527 |
| Totals | 1003 | 5767 | 4728 |

An Industrial Therapy Program was started in September utilizing many activities throughout the Clinical Center in which patients might engage under supervision and receive benefit from becoming a contributing member of the community, build up their work capacity with the goal of rehabilitation of the patient to the highest level possible, and frequently to learn new skills or refresh former ones. Patients from NHI, NIAMD, NIMH and NINDB have participated in this phase of the Occupational Therapy Program.

| | Number of Patients | Number of Visits | Hours of Treatment |
|---|---|---|---|
| September | 9 | 93 | 297 |
| October | 13 | 102 | 178 |
| November | 7 | 66 | 198 |
| December | 6 | 64 | 263 |
| Totals | 35 | 325 | 936 |

In October, with the addition of an Occupational Therapist to the staff, we were able to offer specific treatment for patients with physical disabilities, including training in activities of daily living. Patients from NHI, NIAMD, NMI, and NINDB have been referred for this specific type of treatment in the three months this clinic has been functioning.

| | Number of Patients | Number of Visits | Hours of Treatment |
|---|---|---|---|
| October | 13 | 102 | 178 |
| November | 8 | 133 | 193 |
| December | 16 | 193 | 294 |
| Totals | 37 | 428 | 665 |

Group activities were planned to meet the varying interests and needs of the patients in all the Institutes and have included the patients' newspaper, dramatic group, gym activities, table games, parties and social functions, outside entertainers, sightseeing trips and outside concerts and plays, golf, tennis, movies, etc. An average of 40 of these group activities were planned a month.

The floor plans for the Occupational Therapy area have been almost completed. Administrative procedures have been worked out for the more efficient running of this Service. Recruitment efforts have been continued.

All members of the Occupational Therapy Service attended the Annual Conference of the American Occupational Therapy Association in Washingtcn. Three of the staff participated, one being the general chairman of the Conference and two being group leaders.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12127
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y.1955 | $112,000 | 7 | 17 | 24 | 6 | 14.6 | 20.6 | |
| F.Y.1956 | 134,600 | 7 | 20 | 27 | 7 | 18.1 | 25.1 | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Not applicable.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable.

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12127
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Professional Services Departments
LABORATORY, BRANCH OR DEPARTMENT

3. Dental Department
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12125
SERIAL NO.

6. Dental Department
PROJECT OR ACTIVITY TITLE

7. Dr. Ralph S. Lloyd
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Dr. Herbert Swerdlow, Dr. E. M. Benjamin
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Project:

Dental Department, Clinical Center

Objectives:

The objective of this Department is to provide a complete diagnostic and dental treatment service for the various institutes of the National Institutes of Health.

Methods Employed:

In order to accomplish this objective, the dental department was equipped and personnel were employed and some of the personnel was trained. It was the aim of the dental department to perform a complete dental examination on every patient admitted to the hospital. Recommendations for treatment were made and where requested, dental treatment was rendered to those examined. Full mouth dental radiographs were included in every dental examination.

Number and Kinds of Major Services Rendered:

The Dental Department is prepared to and did render every type of dental treatment which was found necessary to perform on the patients examined. The number of dental treatments are progressively increasing from month to month. Table I will illustrate the utilization of the department by the various institutes.

R.P.C. - 1 (Cont'd)
December 1954

Major Problems Encountered:

One of the most difficult problems arising relative to the operation of the dental department was that of staffing. According to the staffing pattern which had been approved, a dentist was to have been appointed in October. It was impossible to obtain a person to fill this post. The National Institute of Dental Research has, however, detailed one of their staff to the clinic at the present time. The staffing pattern also called for the appointment of a hygienist. This position was vacant until the last month of the year. The dental technician vacated his position and we were without the benefit of his services for six weeks. A replacement has been hired.

It is the procedure of the Clinical Center that all patients be referred to the dental department for an adequate dental examination. At the present time, approximately 80% of the patients are being examined. After the examination is completed, an evaluation of the case is forwarded to the ward surgeon and it is his privilege to requisition dental treatment that he thinks is necessary. It is our estimate that 40% of those patients who are examined receive dental treatment.

Important Progress Achieved:

The growth and development section of the dental department has made great strides. A cephalometric X-ray was installed in this department, and the procedures are being conducted by two well-trained orthodontists who are in the employ of the National Institute of Dental Research. Increasing demands relative to dental procedures by the institutes were successfully met during the year. A physician attached to the National Institute of Dental Research renders a complete physical examination on all clinical research cases of the National Institute of Dental Research.

Significance to Clinical Research Program:

Many clinical projects of other institutes were facilitated by dental treatment. Rehabilitation of masticatory apparatus in debilitated patients was of help. Emergency dental procedures are constantly arising wherever a large number of patients are assembled and were successfully treated in every case. Many special dental consultations related to patient care were handled. The dental department furnished facilities and in some cases some personnel time for clinical dental research.

In the latter part of 1954, the wing on the second floor above the Dental Department was activated and staffed by the National Institute of Dental Research. Several clinical research projects being participated in by the staff of the Dental Department were formalized and are definitely under way. In the field of periodontia, a study is in progress to compare the conservative and the radical treatment of periodontoclasia. A study to evaluate means of treatment in artificially created pockets in the gingiva is also under way. A study on the effect of premature contacts on the periodontium, and an evaluation of drilling techniques and their effect on the health of the pulp is in progress. The staff of the Dental Department is participating in these above-named projects. A number of other clinical research studies by the staff of the National Institute of Dental Research require the facilities of the dental department.

R.P.C. - 1 (Concl'd)
December 1954

In the field of maxillo-facial prostheses, a number of patients of the National Cancer Institute and the National Institute of Neurological Diseases and Blindness were benefited by special prosthetic devices.

Proposed Course of Project:

Action was instituted to activate three additional dental chairs. Purchase orders were placed and the equipment is being installed at the present time. This no doubt completes the major portion of the dental equipment to be purchased by the department for some time to come.

TABLE 1

| Institute | No. of visits Inpatients | No. of visits Outpatients | No. of Examinations | No. of Treatments |
|---|---|---|---|---|
| NCI | 394 | 175 | 150 | 567 |
| NHI | 616 | 132 | 170 | 807 |
| NIAMD | 463 | 98 | 78 | 564 |
| NMI | 170 | 127 | 77 | 358 |
| NIDR | - | 1248 | 107 | 673 |
| NIMH | 156 | 15 | 40 | 194 |
| NINDB | 456 | 226 | 234 | 734 |
| Total | 2,255 | 3,021 | 856 | 3,897 |

R.P.C. - 2
December 19[illegible]

Analysis of NIH Program Activities

Budget Data Sheet

10. 12125
SERIAL NO.

11.
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $72,000 | 4 | 12 | 16 | 3.7 | 9.8 | 13.5 | |
| FY 1956 | $95,000 | 5 | 13 | 18 | 4.7 | 12.1 | 16.8 | |

12.
BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANT [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1)

The Dental Department has instituted several cooperative research studies in conjuction with the National Institute of Dental Research. They are:

1. Compare the conservative and radical treatment of periodontoclasia.
2. Compare the type of peridontal treatment in artifically created gingival pockets.
3. The effects of premature contacts and trauma on health of the periodontium.
4. Tissue resistance.
5. Stomatitis and gingivitis.
6. Affects of drilling techniques on the dental pulp.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12125
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Ralph S. Lloyd, Dental Director, PHS, made a Fellow of the American College of Dentists in November 1954.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Office of the Director
LABORATORY, BRANCH OR DEPARTMENT

3. Clinical & Professional Education
SECTION

4. _____
LOCATION (IF OTHER THAN BETH.)

5. 12112
SERIAL NO.

6. Clinical and Professional Education
PROJECT OR ACTIVITY TITLE

7. Murray C. Brown, M.D.
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. _____
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

The Clinical and Professional Education Branch of the Clinical Center is concerned with formal educational activities for professional people, the conduct of staff meetings and other professional activities relating to the growth of professional competence and the maintenance of standards of clinical care. As an interim responsibility this office has also been responsible for Volunteer Services in the Clinical Center and the planning of communication services having potential educational implications. Its Chief also maintains a relationship to the Director of NIH and organizes and conducts educational programs of overall importance to the National Institutes of Health. Its Chief represents the National Institutes of Health in a variety of Public Health Service educational activities.

## CLINICAL CENTER ACTIVITIES

### Clinical Fellowships

There are now five programs for the training of clinical fellows which have received approval for one or more years of Residency training from the appropriate American Specialty Board. Four of these approvals were secured in calendar 1954. Two proposed programs did not receive approval (Neurological Surgery and Ophthalmology) on technical grounds. One program has been inspected and we have informal assurance of its approval although official recognition is still pending. Five clinical fellows were appointed in 1954.

Staff Meetings

There have been a total of 17 meetings of the combined clinical Staffs of the National Institutes of Health during 1954. Twelve of these meetings were combined clinical Staff Meetings. Two were Clinicopathologic Conferences and the remaining three were Quarterly Staff Meetings devoted to a review of professional service standards. Distinguished professors of medicine were the discussants for the two Clinicopathologic Conferences.

Education Committee of the Medical Board

This committee met a number of times under the chairmanship of the Chief of this Branch and developed basic policies governing the conduct of staff meetings and the appointment and status of clinical fellows. This committee, augmented by members of the Public Health Service Committee on Residencies and Internships, also participated in the selection process whereby clinical fellows were appointed.

Volunteer Services

Regularly scheduled Volunteer Services have been limited to those provided by a cooperative arrangement between the American Red Cross and the Clinical Center, whereby the Gray Lady Corps of the Montgomery County Chapter created a Clinical Center Unit for this purpose. On January 1, 1954, the first class of Gray Ladies had been on duty for seven months. By January 1, 1955, two additional classes had been graduated and the group had grown from less than 30 to 74 Gray Ladies. During 1954 this group rendered 9,734 hours of volunteer service.

In addition to these services a number of volunteers participated in activities in the recreational therapy area on a "one time" visit basis.

Television

During 1954 the radio and television distribution system for the Clinical Center was refined and developed into a final design. Specifications for the system were drafted in the latter months of the year and are in process of final review prior to bid invitations. Unusual features of the system are its economy and its extreme flexibility. As presently planned the television portion of the system is in essence an electronic communication network capable of a wide variety of uses other than broadcast television. This design was developed in collaboration with Mr. Donald L. Snow.

ACTIVITIES CONDUCTED FOR NIH

Orientation of New Employees

The National Institutes of Health has had an organized program for the general orientation of new employees since July 1953. During 1954 seven series of orientation programs were conducted. Four hundred and thirteen people attended the sessions. A shortage of clerical staff

resulted in temporary suspension of this program during the second half of 1954. The program has now been resumed and a large backlog of new employees are currently attending these classes. Two special orientation sessions were planned and conducted. These were for the top level Public Health Service employees from the four operating Bureaus.

Graduate School

In 1954, a program of formal "out of working hours" courses was organized in cooperation with the Graduate School of the Department of Agriculture. Special committees of NIH scientists and other groups with special talents and interests were created to select the content and guide the conduct of these courses. The courses are offered at the employee's expense at the current rates charged by the Graduate School. Three hundred people were enrolled in the fall semester for a total offering of 22 courses. Eighteen courses secured a satisfactory enrollment while four were dropped because of lack of interest. A spring semester program was planned in the latter months of '54 and included a broader spectrum of course material.

Inservice Training

Plans for the institution of a program of inservice training were developed during the latter months of 1954. These plans include the employment of a training officer to stimulate and coordinate instructive programs directed at improving the performance of employees in those areas where instruction promises to solve serious administrative problems. The necessary administrative readjustments have been worked out and this office is now seeking a suitable person for this assignment.

Miscellaneous

The Chief of this Division has been active on the Interagency Committee on Medical Education for National Defense throughout the year and has assisted in the planning of presentations for Deans and Coordinators of Medical Schools Participating in the MEND Program. He has attended national meetings of those organizations dealing with medical education.

Counseling of younger staff members regarding their professional development has been slowly increasing. A number of new programs concerned with professional education have been designed and are in the formative stage.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12112
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y.1955 | 15,100 | 1 | 1 | 2 | 1 | 1 | 2 | -- |
| F.Y.1956 | 15,100 | 1 | 1 | 2 | 1 | 1 | 2 | -- |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Not applicable

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities
Honors, Awards, and Publications Sheet

15. 12112
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Office of Director
LABORATORY, BRANCH OR DEPARTMENT

3. Office of Director
SECTION

4. 12115

5. 12111
LOCATION(IF OTHER THAN BETH.) SERIAL NO

6. Office of Director
PROJECT OR ACTIVITY TITLE

7.
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

D. W. Patrick, M.D., Director
Robert T. Hewitt, M.D., Assistant Director

8.
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

Margaret C. Hannigan, Patient Librarian

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

The purpose of the central organization of the Clinical Center is to furnish patient care and related services required in common by the various Institutes in their clinical investigation programs. The Director of the Clinical Center administers and coordinates these services through his principal staff assistants and department heads. Standard hospital administrative and technical procedures are used to the greatest possible extent, but because of the unique character of the Clinical Center it is frequently necessary to modify, and sometimes to exceed, the criteria that have been established for general hospitals.

During the early fall, the patient care program and facilities were inspected and approved by the Joint Commission on Accreditation of Hospitals, representing the American College of Physicians, the American College of Surgeons, American Hospital Association, American Medical Association, and the Canadian Medical Association. Shortly after the inspection was completed the Chairman of the Joint Commission saw fit to send us a letter of commendation for the manner in which the Clinical Center had met, and in some instances surpassed standard criteria for approved hospitals.

The year may be characterized as a period of continued expansion of staff and activated beds, of steady improvement in the quality and scope of services to patients and research clinicians, and of increased cooperative relationships with referring physicians and with other medical organizations. The details are given in the various departmental reports.

During the year 1,452 inpatients were admitted and 1,326 discharged with an average daily census of 176. Total number of visits to outpatient and followup services was 9,371. The average length of stay of inpatients was approximately 40 days. Average daily percentage occupancy of total bed complement was 72.15. The following table reflects the years growth in active beds and patient census.

| Institute | Total Bed Complement | | Patient Census | |
|---|---|---|---|---|
| | Jan. 1 | Dec. 31 | Jan. 1 | Dec. 31 |
| NCI | 26 | 76 | 12 | 48 |
| NIAMD | 26 | 48 | 22 | 32 |
| NHI | 26 | 62 | 16 | 37 |
| NIMH | 31 | 58 | 11 | 29 |
| NINDB | 26 | 52 | 17 | 40 |
| NMI | 26 | 36 | 15 | 31 |
| Total | 161 | 332 | 93 | 217 |

Perhaps the most serious problem faced during the year has been inability on several occasions to expand the nursing staff sufficiently to permit activation of new nursing units according to schedule. On these occasions we have had to decide whether to open new units on a certain date or to maintain the high standard of nursing care for patients already in the Clinical Center. In each case we have decided against lowering the standards which we believe are essential for research patients. In view of the nationwide shortage of graduate nurses, it appears that this will be a continuing problem.

MEDICAL BOARD

The Medical Board was made up of the same chairman and members as those appointed for the year 1953. The committee memberships were essentially the same as the Chairman of the Board felt it was not wise to make changes after less than a year of operation.

The Organization and By-Laws Committee of the Medical Board prepared a report outlining the Organization and By-Laws of the Medical Staff of the Clinical Center. This report has been approved by the Medical Board and referred to the Director of NIH for consideration.

A Nutrition Committee was established. The function of this committee is to recommend to the Medical Board operational policies of the Nutrition Department bearing upon clinical investigation.

The Clinical Research Committee has been active this year principally because the number of projects involving normal volunteers has increased and it is mandatory that all of these projects be referred to the Clinical Research Committee.

The Education Committee of the Board has experimented with various types of clinical staff meetings in order to determine which ones are suited to and desired by the staff of the Institutes. The Chairman of the Medical Board reported at each quarterly staff meeting on the operation of the Board, including an audit of professional services as reported by each Institute.

It is believed that the Medical Board has worked out its own functio more clearly and that it is operating at greater efficiency as time goes on.

The Board has spent a good deal of time on criteria for accreditatio and is gratified by the fact that the Clinical Center is rated very highly by the Joint Commission on Accreditation of Hospitals.

PANEL OF CONSULTANTS

During the year 1954 there were 323 visits by medical care consultant to the Clinical Center. Fifteen medical care consultants have been added to the roster, the total number now being 157.

The system for calling medical care consultants has been running smoothly. Institute staff members responsible for covering a particular specialty are designated as panel chiefs. If a staff member wishes the services of a medical care consultant he makes known his desire to the responsible panel chief who then makes arrangements for securing the services of the consultant desired. In this manner a consultant can be used by more than one Institute during one visit to the Clinical Center. It is felt that the consultant program as a whole has worked out very well.

PATIENT LIBRARY

In August a full-time professionally qualified Librarian assumed charge of the Patients' Library. The first task was procurement of appropriate books and periodicals and organizing basic services to patients. With one full-time clinical assistant and the help of the Red Cross Gray Ladies, the following services were being provided routinely by the end of the year:

(1) Bookcart visit to each floor twice a week.
(2) Assistance in selecting reading material to ambulatory patients who come to the library.
(3) Story and reading hours for children on the floors or in the library.
(4) Talking Book machines and records for blind patients.
(5) Special services to teachers in supplying books for their classroom work and in teaching the pupils to use the library.

In addition to our present supply of 950 catalogued books, books have been borrowed from the Montgomery County and the Bethesda Public Libraries and the Library of Congress has loaned Talking Book records which have been circulated among our blind patients 138 times. The scientific library, NIH, has provided books, journals and language records as needed.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12111 (Office of Director)
12115 (Panel of Consultants)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y. 1955 | 74,900 | 4 | 3 | 7 | 6.8 | 2.6 | 9.4 | - - |
| F.Y. 1956 | 79,200 | 4 | 3 | 7 | 7.3 | 2.9 | 10.2 | - - |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Not applicable

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C.-3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. 12111
12115
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C.-1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Pathologic Anatomy Department
LABORATORY, BRANCH OR DEPARTMENT

3. Surgical Pathology & Postmortem Service
SECTION

4. _____
LOCATION(IF OTHER THAN BETH.)

5. _____
SERIAL NO.

6. Pathologic Anatomy in the Clinical Center, National Institutes of Health
PROJECT OR ACTIVITY TITLE

7. Louis B. Thomas, M.D., Head
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. _____
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

Drs. Ellsworth Alvord, William Banfield, Raymond Christensen, Charles Congdon, John Edgcomb, Benjamin Highman, Albert Hilberg, Ed Lerner, Ladd Loomis, Leon Sokoloff, Harold Stanley.

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Objectives:

The objectives of the Surgical Pathology and Postmortem Service in the Clinical Center are twofold: first, to furnish a diagnostic service in autopsy and surgically removed tissues, and second, to aid from a morphological standpoint the various clinical research problems which are under study in the Clinical Center. To accomplish this, there are in addition to the professional staff, numerous other investigators listed under item 8 who from time to time work on particular cases or particular problems in pathologic anatomy in the Department.

Methods:

The methods used are those standard methods which involve description of organs and tissues, fixing and sectioning of this material and the preparation of histological slides. These methods include preparation methods usually used in a Pathologic Anatomy Department and in addition because of the many problems of investigators, the use of a wide variety of special staining procedures.

Patient Material:

The appended chart shows in detail the human material in the laboratory during 1954. It lists the 76 autopsies performed with an Institute breakdown, and shows that during the year over 8,000 slides were cut. Nearly 5,000 of these were stained with a variety of stains, chiefly hematoxylin and eosin. One thousand one hundred specimens were accessioned in the Surgical Pathology Service and the Institute breakdown and number of sections prepared can be seen from the chart. Of note is the fact that 66 frozen section reports were made during the time of surgical operation and these were done in the module set aside for that purpose, room 10N218. In addition this laboratory area module was also frequently used to handle tissue under sterile conditions and dissect immediately after surgical removal so that portions of it can be used for special chemical or bacteriological reasons.

Aside from the attempt to provide excellent diagnostic service as far as surgical and postmortem specimens are concerned, there also developed during the year the particularly important function of furnishing certain tissues to scientists in various laboratories at the National Institutes of Health. There are at present approximately 25 scientists at N.I.H. who have current requests for portions of particular tissues or organs on file with the Department and on many occasions it is possible to furnish these investigators with fresh human material for their research. In fact, an average of approximately 12 of these investigators are contacted at the time of each autopsy done in the Department.

The staff of the Pathologic Anatomy Department participates in numerous conferences in the Clinical Center, in order to discuss with clinical colleagues the diagnoses and subsequent course of various patients. To meet this responsibility a total of four weekly conferences have been established in the Department. One of these is the Brain Conference conducted by Dr. Alvord on Monday, an Autopsy Conference on Tuesday, a Joint Pathology Staff Conference on Wednesday and a Surgical Pathology Conference on Friday.

Much of the time and effort of the staff during 1954 was used for moving into the Clinical Center and establishing a smoothly functioning Department. During the coming year the installation and routine operation of the Department should be completed and more effort on the part of the staff can be made for the work-up and study of material examined in the Department.

F.P.C. - 2 Analysis of NIH Program Activities
December 1954

Budget Data Sheet

10. Not applicable
SERIAL NO.

11. Not applicable
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y. 1955 | | | | | | | | |
| F.Y. 1956 | | | | | | | | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

This function is provided by Research Pathologists of several Institutes, principally NCI, as a central service.

14.
IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

NCI, Pathologic Anatomy Branch

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. Not applicable
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C.-1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Pathologic Anatomy Department — LABORATORY, BRANCH OR DEPARTMENT
3. Cytodiagnostic Service — SECTION
4. _____ — LOCATION(IF OTHER THAN BETH.)
5. _____ — SERIAL NO.

6. "Exfoliative Cytology as Applied to Human Diagnostic Problems"
PROJECT OR ACTIVITY TITLE

7. Albert W. Hilberg, M. D., Head
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. None
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. Project title: "Exfoliative Cytology as Applied to Human Diagnostic Problems".

Objectives: The Cytodiagnosis Service has a primary objective - the provision of a diagnostic tool to the clinician for the early diagnosis of malignancy or the detection of unsuspected malignancy. In addition attempts are being made to further define and evaluate the cytological criteria of malignancy, the specific differences in components of malignant cells, the significance of malignant cells in washings from surgical wounds, and the significance of cytologic changes during endocrine therapy or chemotherapy.

Methods employed: The methods are those of routine Papanicolaou staining and careful cytological screening procedures. These are done with concurrent clinical evaluation. Additional methods employ special techniques of preparation of cytologic specimens for better preservation of cellular components; special staining procedures for specific cellular substances and structures. For example, a fluid aspirated from the pleural cavity is first stained by routine Papanicolaou stains and hematoxylin-eosin stains. In addition this fluid is separated into various fractions by centrifugation, some portions are prepared by clearing with a sodium chloride solution, some portions are suspended in human serum, etc. Specific stains are employed for specific cellular detail such as the Periodic acid Schiff reaction: Best's Carmine stain; Gomori's acid and alkaline phosphatase method; Regaud's method for mitochondria; Laidlaw's Method for Dopa Oxidase; Foot's modification of Bielchowsky's method for reticulum, etc. Comparison studies are made between different smears of exfoliated cells and between smears of exfoliated cells and tissue sections, particularly in instances of therapy problems.

R.P.C.-1 (Cont'd)
December 1954

Patient Material (1954 Calendar Year)*

| Type of Material | Accessions | No. of Slides Examined |
|---|---|---|
| Vaginal and cervical | 1011 | 2619 |
| Prostatic | 50 | 270 |
| Gastric | 12 | 67 |
| Bronchial | 68 | 339 |
| Misc. Fluids (includes wound washings) | 251 | 1626 |
| Totals | 1392 | 4921 |

* These figures do not include the last 10 days of December 1954.

Major findings: At least 3 unsuspected carcinomas of the cervix uteri were detected, two unsuspected lung tumors detected and the primary diagnosis of two other lung tumors made. Results of wound washings following surgical procedures indicated the presence of tumor cells in several instances.

Studies of carcinoma of the cervix uteri revealed estrogenic argyrophil secretion patterns in all cases but one, although most patients were in the menopause and showed no clinical evidence of estrogen activity.

During endocrine therapy of breast cancer a change in endocrines given could be followed by the study of argyrophil secretion patterns and cytologic details in cells exfoliated from the cervix and vagina.

The presence or absence of estrogenic activity in young girls and in cases of amenorrhea was determined in many clinical cases. The determination of ovulatory and anovulatory cycles was also done.

Proposed course of project: Continuing service and expansion of service to the clinicians of all the categorical Institutes in the Clinical Center, National Institutes of Health. Collaboration and assistance in evaluation of various clinical research projects such as endocrine therapy of cancer, chemotherapy, surgical wound washings and evaluation of hormonal balances in the female. Continued development of new preparation procedures for smears and fluids and new staining procedures, as well as applicability of tissue procedures to smears and fluids.

A continued study of exfoliated cells with special emphasis on cytoplasmic and nuclear details as demonstrated in malignant and non-malignant cells from various body sites.

An attempt will be made to provide adequate material and instruction to those physicians of the National Institutes of Health who desire and request such material and instruction in order to further their professional knowledge and skills.

REPORT OF PATHOLOGIC ANATOMY DEPARTMENT — Annual Report — January to December 1954

INSTITUTE AND TYPE OF PATIENT

| Service and Type of Activity | NCI | | NHI | | NIMH | | NIAMD | | NMI | | NINDB | | NIDR | | TOTAL | | REF. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | FU | In | FU | In | FU | In | FU | In | FU | In | FU | In | FU | In | FU | In | FU |
| Postmortem-Pathologic Anatomy Service | | | | | | | | | | | | | | | | | | |
| No. of autopsies performed | 51 | | 14 | | | | 2 | | 5 | | 4 | | | | 76 | | | |
| Blocks of tissue | 2340 | | 715 | | | | 53 | | 293 | | 118 | | | | 3519 | | | |
| Slides | 5444 | | 1770 | | | | 388 | | 630 | | 257 | | | | 8489 | | | |
| Slides actually stained | 2891 | | 1021 | | | | 154 | | 371 | | 187 | | | | 4624 | | | |
| Surgical Pathology | | | | | | | | | | | | | | | | | | |
| Tissue Specimens | 669 | 17 | 74 | 2 | 4 | | 65 | | 92 | 1 | 28 | 2 | 42 | 18 | 974 | 126 | | 86 |
| Slides H-E staining | 2342 | 54 | 229 | 2 | 4 | | 292 | | 314 | 6 | 72 | 1 | 77 | 41 | 3330 | 324 | | 220 |
| Frozen sections | 53 | | 2 | | | | 2 | | 5 | | 4 | | | | 66 | | | |
| Special Procedures | 1196 | 9 | 171 | | | | 270 | | 360 | | 19 | | 11 | 5 | 2027 | 25 | | 11 |
| Cytodiagnosis Laboratory | | | | | | | | | | | | | | | | | | |
| Vaginal and cervical specimens | | | | | | | | | | | | | | | | | | |
| Accessions | 212 | 77 | 32 | 9 | 2 | | 10 | | 21 | 7 | 6 | 5 | | 3 | 625 | 113 | 342 | 12 |
| Smears | 793 | 251 | 97 | 20 | 6 | | 24 | | 71 | 17 | 22 | 14 | | 10 | 1707 | 348 | 694 | 36 |
| Prostatic specimens | | | | | | | | | | | | | | | | | | |
| Accessions | 10 | 7 | 4 | | | | 1 | | 7 | | 9 | 9 | | 1 | 33 | 17 | 2 | |
| Smears | 153 | 25 | 17 | | | | 4 | | 28 | | 29 | 16 | | 2 | 236 | 43 | 5 | |
| Gastric specimens | | | | | | | | | | | | | | | | | | |
| Accessions | 2 | | | | 1 | | 2 | | 7 | | | | | | 12 | | | |
| Smears | 25 | | | | 5 | | 8 | | 29 | | | | | | 67 | | | |
| Bronchial Washings | | | | | | | | | | | | | | | | | | |
| Accessions | 43 | 1 | 4 | | | | | | 19 | 1 | | | | | 66 | 2 | | |
| Smears | 197 | 12 | 18 | | | | | | 100 | 12 | | | | | 315 | 24 | | |
| Misc. Fluids | | | | | | | | | | | | | | | | | | |
| Accessions | 86 | 1 | 12 | | 4 | | 5 | | 6 | 3 | 1 | | | | 186 | 5 | 72 | 1 |
| Smears | 1077 | 11 | 212 | | 16 | | 49 | | 41 | 9 | 16 | | | | 1602 | 26 | 191 | 6 |

R.P.C. - 1 (Concl'd) December 1954

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. Not applicable
SERIAL NO.

11. Not applicable
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y. 1955 | | | | | | | | |
| F.Y. 1956 | | | | | | | | |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

National Cancer Institute, Pathologic Anatomy Branch

14.
IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

National Cancer Institute, Pathologic Anatomy Branch

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. Not applicable
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

1. Symposium: Bronchogenic Carcinoma, Exfoliative Cytology

   Potomac and Virginia Chapters of American College of Chest Physicians, Oct. 31, 1954.

2. Vaginal and Cervical Cytological Studies in Mammary Cancer Patients Receiving Hormone Therapy.

   Transactions of Inter-Society Cytology Council November 1954.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center — INSTITUTE OR OTHER NIH UNIT
2. Office of Director — LABORATORY, BRANCH OR DEPARTMENT
3. Informational Services — SECTION
4. — LOCATION (IF OTHER THAN BETH.)
5. 12113 — SERIAL NO
6. Informational Services — PROJECT OR ACTIVITY TITLE
7. Information Officer, Judson Hardy — PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY
8. Not applicable — OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS
9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

Informational Service

Informational activities emphasized materials and programs whose objective was to inform individual physicians and medical organizations concerning admission policies and procedures, the specific studies being conducted and the diagnostic requirements of each. To this end, the Information Officer worked closely with the Medical Board and the various Clinical Directors. A pamphlet for physicians was issued and given wide distribution. The project descriptions and diagnostic criteria it contains will be revised twice yearly and given appropriate circulation.

Particular effort was made to develope cooperative relationships with Montgomery County Medical Society, Maryland State Medical Society, and the societies of the District of Columbia, Virginia and West Virginia. Medical and other professional societies were encouraged to hold meetings in the Clinical Center auditorium.

The patient handbook was revised. Numerous articles in the daily press, and in general and specialty magazines were stimulated and the writers given appropriate assistance.

As the existence and purpose of the Clinical Center became widely known a constantly increasing volume of telephone and mail inquiries was processed by the Information Office. Under an agreement with the Chief of the Scientific Reports Branch, this office also processed a large volume of general health and medical inquiries.

R.P.C.
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. 12113
SERIAL NO.

11.
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| F.Y. 1955 | 14,600 | 1 | 1 | 2 | 1 | 1 | 2 | - |
| F.Y. 1956 | 14,600 | 1 | 1 | 2 | 1 | 1 | 2 | - |

12.
BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13.
IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

Not applicable

14.
IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publication Sheet

15. 12113
SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDA YEAR 1954:

Not applicable

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. Clinical Center
INSTITUTE OR OTHER NIH UNIT

2. Professional Services Department
LABORATORY, BRANCH OR DEPARTMENT

3. Surgical Service
SECTION

4.
LOCATION (IF OTHER THAN BETH.)

5.
SERIAL

6. Surgical Services
PROJECT OR ACTIVITY TITLE

7. Robert R. Smith, M.D., (NCI) Acting Chief Surgeon
PRINCIPAL INVESTIGATOR OR OTHER RESPONSIBLE HEAD OF ACTIVITY

8. Dr. Glenn Morrow (NHI); Dr. William Butler (NCI); Dr. Thomas Johns, (NHI) Dr. John Waite (NCI).
OTHER SENIOR INVESTIGATORS OR PRINCIPAL ASSISTANTS

9. PROJECT DESCRIPTION (SEE INSTRUCTIONS AND SAMPLES)

The purpose of this Service is to provide all necessary surgery for those Institutes which do not have their own surgical service.

There are certain factors regarding NIH surgery that all surgeons agree are essential:

(1) That a surgeon be employed by an institute only if he is interested in clinical investigation, i.e., to keep surgery, and not the surgeon, a tool of clinical investigation.

(2) That the surgical practice within an institute having surgeons on their staff remains a problem for that group.

(3) That it would be undesirable to employ a surgeon or a group of surgeons to perform surgery on a service basis. The total amount of such surgery is so small that such an individual at the present time could only create new problems.

(4) The necessity of some mechanism for coordinating the functioning of the operating room, and to provide surgical coverage for the entire Clinical Center.

A solution to the problem is believed possible. It is believed that the title "Chief Surgeon, NIH" should not be used, but rather a non-authoritative word such as Chairman, Surgery Panel, or Chairman, Committee on Surgery. Fixation of over-all responsibility of surgical practice should be made generally apparent. This responsibility could rest in a committee made up of the chiefs of surgery of the three institutes employing surgeons, the Chief Anesthetist and the Chief of Professional Services. Since a group can never function without a responsible individual, one of the surgeons should be appointed chairman of this group. It would be his responsibility to get the group to formulate policy which, when approved by the Director of the Clinical Center, would become working orders for Clinical Center surgery.

It will require compromise and help from everyone to make the ideal of clinical investigation work.

The Anesthesia Department has functioned very efficiently. The doctors on this service have been very generous in their time in an effort to be of service to our patients and to the surgeons.

Operations Performed:

| Institute | Major Operations | Minor Operations |
|---|---|---|
| NCI | 111 | 179 |
| NINDB | 70 | 112 |
| NHI | 56 | 79 |
| NMI | 17 | 48 |
| NIAMD | 8 | 40 |
| NIMH | 1 | 2 |
| Totals | 263 | 460 |

33 physicians from NIH used the facilities of the operating rooms.
7 outside consultants did 7 major operations (4 general surgery, 2 orthopedic, 1 urology).

Major surgery, except for the 7 cases performed by outside consultants as mentioned above, was all done by institute surgeons as listed below:

| Institute | No. pts. having Major Surgery | No. operas. done by NCI | No. operas. done by NHI | No. operas. done by NINDB | Outside Consultants |
|---|---|---|---|---|---|
| NCI | 111 | 99 | 4 | 5 | 3 |
| NHI | 56 | 3 | 50 | 1 | 2 |
| NINDB | 70 | 3 | 1 | 66 | - |
| NMI | 17 | 8 | 7 | 1 | 1 |
| NIAMD | 8 | 1 | 6 | - | 1 |
| NIMH | 1 | 1 | - | - | - |
| Totals | 263 | 115 | 68 | 73 | 7 |

Routine surgery necessary incident to patients being in the Clinical Center and unrelated to a research program has been minimal. There were 2 fractures that occurred while patients were here, requiring open reduction and fixation. 2 appendectomies were done; both were for acute gangrenous appendices. 20 local excisions, extractions or biopsies; 2 lacerations repaired; 1 gastric resection for massive bleeding ulcer; and 1 transuretheral resection.

Consultations:

Routine general surgery consultation requests have been received and answered through this office. A complete list of such requests is not available since on many occasions direct telephone requests were received and the consulting surgeon made a note directly on the patient's chart. I am sure that Dr. Morrow's group answered a number of direct consultation requests.* There were a total of at least 184 consultation requests received by this office. A number of the ENT and a few orthopedic consultation requests were referred directly to outside consultants.

| Institute requesting consultations (gen'l surg.) | No. of consultations answered by: | |
|---|---|---|
| | NCI | NHI |
| NINDB | 64 | 3 |
| NIMH | 19 | 0 |
| NIAMD | 39 | 4 |
| NHI | 19 | 0 |
| NMI | 24 | 3 |
| Totals | 165 | 10 * |

In the past few months Dr. Radigan, NHI, with the help of outside urologists, has managed the urology consultations. Dr. Morrow has agreed to take the routine orthopedic consultations. NCI, because of their interest in ENT, Gynecology and Urology (when urologist is available), will continue to follow consultations in those fields. The work load of routine consultations need not be a bothersome one if everyone does his part. I am sure this would be possible if and when the administrative responsibility is fixed.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| F.Y. 1955 | | Not applicable | | | | | | |
| F.Y. 1956 | | | | | | | | |

12. BUDGET ACTIVITY:

RESEARCH (SERVICE) [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF NIH, THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO.(S) (ITEM 10)

This function is provided as a central service by surgeons affiliated with NCI, NHI, and NINDB.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Not applicable

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. SERIAL NO.

16. LIST PUBLICATIONS RESULTING FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Not applicable.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF ORAL BACTERIOLOGY — LABORATORY OR BRANCH
3. _____ SECTION
4. _____ LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 1 — SERIAL NO.
6. The Relationship of Pathogenic Fungi to Diseases of the Oral Cavity. — PROJECT TITLE
7. Dr. Arden Howell, Jr. — PRINCIPAL INVESTIGATOR(S)
8. _____ — OTHER INVESTIGATORS
9. PROJECT DESCRIPTION:

Project: The Relationship of Pathogenic Fungi to Diseases of the Oral Cavity.

Objectives: To study the incidence and identity of pathogenic or potentially pathogenic fungi in the normal mouth with special emphasis on the filamentous forms of the genus Actinomyces; and to study the possible relationship of these organisms to dental caries and to other diseases of the oral cavity or related areas.

Methods Employed: The nutrition of this group of filamentous fungi (Actinomyces Spp.) has been studied by growing them on various types of artificial culture media under both aerobic and anaerobic conditions. In addition, various generally accepted chemical analyses have been employed for the study of the metabolic products produced by these organisms.

Major Findings: During the past year major emphasis has been placed on a study of the nutrition of, and metabolic products produced by, filamentous organisms of the genus Actinomyces. Methods have been developed for a critical evaluation of the effects on growth of these fungi of various nutritive substances; an apparently marked susceptibility to heavy metals present in certain artificial culture media has been demonstrated; and it has been shown that these fungi produce large quantities of lactic acid from their fermentation of glucose.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 1
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to Dental Research: Numerous reports may be found in the literature concerning the presence of filamentous organisms in the oral cavity or adjacent areas. However, in the majority of instances complete descriptions of the organisms isolated or specific designations have not been given so that the true incidence and significance of such organisms in the oral flora is still open to question. Studies of the nutrition of these fungi and determination of their metabolic products are necessary as a basis for studying the incidence and identity of these forms in the oral cavity and related areas and the possible role(s) they may play in diseases of the oral cavity.

Proposed Course of Project: During the coming year major emphasis will continue to be placed on:

(1) The nutritional requirements of species of Actinomyces.

(2) Determination of the products of glucose fermentation by species of Actinomyces.

(3) A continuation of a taxonomic study of species of this genus by other methods.

R.P.C. - 2
December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 1
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $16,457 | 1 | 1 | 2 | 1 | 1 | 2 | -- |
| FY 1956 | $16,257 | 1 | 1 | 2 | 1 | 1 | 2 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Arrangements have been completed to continue the study of the nutritional requirements of, and metabolic products produced by, species of Actinomyces as a joint project with Dr. Leo Pine, Mycology Unit, Laboratory of Infectious Diseases, NMI (Project No. _____)

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF ORAL BACTERIOLOGY — LABORATORY OR BRANCH
3. _____ SECTION
4. _____ LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 2 — SERIAL NO.

6. Studies on Oral Acidogenic and Acid-Consuming Microorganisms.
PROJECT TITLE

7. Mr. Morrison Rogosa
PRINCIPAL INVESTIGATOR(S)

8. Dr. Robert J. Fitzgerald, Dr. Tetsuo Shiota, and Mr. Harold V. Jordan, Jr.
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Studies on Oral Acidogenic and Acid-Consuming Microorganisms.

Objectives: To assess the role of microorganisms, particularly the strongly acidogenic and acid-consuming microorganisms, in oral disease processes such as dental caries. This assessment depends largely on a proper understanding of the physiology of these bacteria under various conditions. The following major problems are under study:

(1) Taxonomic studies which include quantitative biochemical studies on the formation of end-products during the biochemical attack on available substrates.

(2) Study of the changes in the oral flora of the hamster and rat which occur with the development of caries.

(3) Study on the utilization of lactic and other organic acids in the oral environment.

Methods Employed: Animal experimentation using cariogenic diets; sampling and culturing of oral samples on selective media developed for this project; pure culture studies using biochemical and other analytical methods; use of nutritional test media to determine nutritional requirements of microorganisms; use of Warburg technique, etc.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 2
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED)

Major Findings: (1) The distribution of lactobacilli and streptococci varies with the age of experimental hamsters and does not seem to correlate with the development of dental caries.

(2) The types of lactobacilli in the hamster are generally unique to the animal and do not closely resemble lactobacilli from human or rat sources.

The findings of (1) and (2) are being prepared for publication.

(3) The Veillonella, a major group of oral organisms utilizing organic acids such as lactic, were grown in synthetic medium. The vitamin requirements of these organisms were found to be thiamine and pyridoxamine. In addition, considerable progress has been made in the knowledge of the amino acid nutrition and also in the development of a selective medium for the isolation and emmeration of the Veillonella.

Significance to Dental Research: It is now generally agreed that microorganisms are involved in the development of dental caries. How they are concerned is the problem. The formation of acid seems necessary for the initiation of dental decay. However, information on the dissipation of acids is almost completely lacking. Since it is highly likely that there is an active competition between the production and consumption of organic acids by different groups of organisms, it is obvious that a beginning must be made in the study of the utilization of organic acids by the oral flora.

Proposed Course of Project: During the coming year work is to be continued to gain a knowledge of the nutrition and biochemistry of the Veillonella, their relationship to other microorganisms, and oral health.

R.P.C. - 2
December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 2
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $15,287 | 2 | 2 | 4 | 1 1/6 | 1 | 2 1/6 | -- |
| FY 1956 | $16,559 | 2 | 2 | 4 | 1 1/6 | 1 1/3 | 2 1/2 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Dr. Shiota is paid from the American Dental Association Gift Fund.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES, OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral Bacteriology LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR # SERIAL NO.

6. The relationship of Viruses to Diseases of the Oral Cavity.
PROJECT TITLE

7. Dr. William D. McBride
PRINCIPAL INVESTIGATOR(S)

8. None
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The Relationship of Viruses to Diseases of the Oral Cavity.

Objectives: To determine the etiology of various lesions of the soft tissues of the mouth; to study the host-parasite relationship of such infections in order to further elucidate their clinical nature.

Methods Employed: Virus isolations, use of animals, tissue cultivation techniques and concurrent clinical studies.

Patient Material: None to date.

Major Findings: It seems quite probable that a latent infection of tissue culture cells with poliomyelitis has been established.

Significance to DENTAL Research: If this finding is confirmed, it will be the first occasion in which a mammalian virus has been demonstrated to have a similar relationship to the cell as does phage in lysogenic bacteria. Such a finding could be used to great advantage in experimenting with latent infections of man. It has been long suggested that such a relationship could be of major importance in the etiology of cancer.

Proposed Course of Project: This particular facet of latent infections will be extensively explored.

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December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 3
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $12,913 | 1 | 1 | 2 | 1 | 1 | 2 | --- |
| FY 1956 | $17,978 | 1 | 1 | 2 | 1 | 2 | 3 | --- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral Bacteriology LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 3 SERIAL NO.

6. The relationship of Viruses to Diseases of the Oral Cavity.
PROJECT TITLE

7. Dr. William D. McBride
PRINCIPAL INVESTIGATOR(S)

8. None
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The Relationship of Viruses to Diseases of the Oral Cavity.

Objectives: To determine the etiology of various lesions of the soft tissues of the mouth; to study the host-parasite relationship of such infections in order to further elucidate their clinical nature.

Methods Employed: Virus isolations, use of animals, tissue cultivation techniques and concurrent clinical studies.

Patient Material: None to date.

Major Findings: It seems quite probable that a latent infection of tissue culture cells with poliomyelitis has been established.

Significance to DENTAL Research: If this finding is confirmed, it will be the first occasion in which a mammalian virus has been demonstrated to have a similar relationship to the cell as does phage in lysogenic bacteria. Such a finding could be used to great advantage in experimenting with latent infections of man. It has been long suggested that such a relationship could be of major importance in the etiology of cancer.

Proposed Course of Project: This particular facet of latent infections will be extensively explored.

R.P.C. - 2
December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 3
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $12,913 | 1 | 1 | 2 | 1 | 1 | 2 | -- |
| FY 1956 | $17,978 | 1 | 1 | 2 | 1 | 2 | 3 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

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December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF ORAL BACTERIOLOGY — LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 4 — SERIAL NO.

6. The Study of Certain Anaerobic Bacteria Associated with Periodontal Disease. — PROJECT TITLE

7. Dr. Robert R. Onata — PRINCIPAL INVESTIGATOR(S)

8. None — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The Study of Certain Anaerobic Bacteria Associated with Periodontal Disease.

Objectives: The objective of this project is to study the physiology of the fusiform bacilli and certain other anaerobic bacteria known to be associated with periodontal disease, i.e., pyorrhea; to study the differentiating characteristics of the fusiform bacilli, in particular; to develop methods for isolation; and to study their relationship to other bacterial forms of the oral tract.

Methods Employed: (1) The nutritional requirement of the fusiform bacilli is being investigated for the development of a chemically defined medium.

(2) Studies are also being made on the use of antibiotics, namely streptomycin, and a bacteriostatic dye, crystal violet, as components of selective medium for the isolation of fusobacteria.

Major Findings: During the past year the major findings have been the essentiality of pantothenic acid, adenine, and hypoxanthine for the promotion of growth of fusobacteria. Also a selective medium for the isolation of fusobacteria from human saliva specimens has been developed using streptomycin and crystal violet as inhibitory agents.

Significance to Dental Research: Bacteria are implicated either as primary factors in the causal mechanism of or in aggravating of the severity of

Analysis of NIH Program Activities

Project Description Sheet

NIDR 4
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED)

periodontal disease. In order to obtain an understanding of the role of bacteria in periodontal involvements, it is necessary to have knowledge of the different bacterial types comprising the oral flora, both in normal and diseased mouths. The relationship of individual types and species in respect to bacteria associated with periodontal conditions is important. This project is concerned with investigations in the basic fields of physiology and metabolism of certain anaerobic bacteria to study the nutritional requirements for the development of isolation media and to study the characteristics differentiating little known bacteria from better known forms.

Proposed Course of Project: A major portion of the coming year will be devoted to the extension of the further elucidation of growth factors and essential nutrients for the fusiform bacilli and the improvement of techniques and media for the isolation methods. Work will be projected in quantitation of the certain oral bacteria, i.e., fusobacteria, streptococci and micrococci, in normal and diseased mouths and also in experimental periodontal disease in hamsters.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Project Description Sheet

10. NIDR 4
SERIAL NO.

11. BUDGET DATA

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $12,314 | 1 | 2 | 3 | 1 | 1 | 2 | --- |
| FY 1956 | $10,478 | 1 | 2 | 3 | 1 | 2/3 | 1 2/3 | --- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. Oral Bacteriology LABORATORY OR BRANCH

3. SECTION 4. LOCATION (IF OTHER THAN BETHESDA) 5. NIDR 5 SERIAL NO.

6. Multifactorial Study of the Etiology of Dental Caries in Laboratory Animals. PROJECT TITLE

7. Dr. R. M. Stephan PRINCIPAL INVESTIGATOR(S)

8. Miss M. R. Harris OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Objectives: The problem of the etiology of dental caries is complicated by the superimposed effects of many different types of variable factors, such as the parasitic oral microbic flora, the effects of nutritional substances, the physical properties of the diet, and hereditary differences. In humans these factors are not usually subject to experimental control, and in laboratory experiments on animals with the usual littermate and dietary controls unexplained variation in the development of dental caries occurs. It is, therefore, important to study the interrelationships of different types of factors in the etiology of dental caries.

The objectives of this project are to further define the characteristics of microbiological, genetic, nutritional and physical factors which affect the development of carious lesions in laboratory animals, to explore the relative importance of the factors by multifactorial experiments, and to develop more effective measures for their control.

Methods Employed: Experiments are being conducted using 4 stock strains of rats, 10 highly inbred strains of rats and 2 strains of hamsters. (These include the caries susceptible and caries resistant strains of rats developed by Dr. Hunt). The animals are raised on 4 types of diets: Diet 580, a fine particle high sugar diet on which smooth surface caries in rats was developed; Diet 585, a coarse particle diet which induces all types of caries; Diet 593, a fine particle synthetic

Analysis of NIH Program Activities

Project Description Sheet

NIDR 5
SERIAL NO.

diet which induces all types of caries, and a stock diet which usually is non-cariogenic. In multifactorial experiments test substances and procedures are superimposed across the different animal strains and diets. At the end of the experiment from 56 to 100 days the animals are sacrificed and the development of carious lesions and other dental pathology is determined under a stereoscopic microscope.

In addition the teeth and jaws of rats from experiments completed in the Nutrition Section of NIAMD and the NCI are studied for dental pathology. Very interesting types of dental caries and other dental pathology are found in some of these animals.

Major Findings: (1) Comparisons of 14 different strains of rats revealed that the Osborne-Mendel stock strain was by far the most susceptible to proximal and gingival surface caries of any strain of rat, and along with the Hunt Ca/r strain (susceptible strain) was also the most susceptible to occlusal fissure caries.

(2) Although the Hunt caries susceptible and caries resistant strains of rats differed greatly in their susceptibility to occlusal surface caries, the difference in susceptibility to proximal surface and gingival surface caries was small.

(3) Comparison of caries susceptibility of stock strains of rats and hamsters raised in the same cages revealed that the animals were compatible, and that with the exception of one rat strain the rats were more caries susceptible than the hamsters.

(4) In preliminary experiments, a newly developed albino strain of hamster failed to develop caries.

(5) The rare occurrence of caries of the incisor teeth of rats was observed.

(6) A salt mixture was found to reduce caries in rats and to reverse the caries potentiating effect of EDTA (etheylene diamine tetraacetic acid).

Significance to DENTAL Research: The needs for broader perspectives on etiology and for more adequate experimental controls have become increasingly evident from studies of caries in animals. By the use of a multifactorial approach, it is possible to study the relative importance of different factors in the etiology of caries, and to place the experimental approach to the caries problem on a more secure foundation.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 5
SERIAL NO.

Proposed Course of Project: The advance made by the use of multifactorial experiments on this project three years ago was limited because at that time different strains of animals were not used in the experiments, and inherent variation within the strain of rats employed, reduced the statistical significances of the results on the other controlled factors. We plan to enlarge the control and representation of different genetic factors by using to a greater extent the highly inbred strains of rats, and strains of golden and albino hamsters, and to further compare the effects of different basic diets on these different animals in multifactorial experiments.

It is planned to continue the study of dental diseases in the experimental animals received from the other Institutes as this material is precisely defined and many conditions of dental importance can be studied in it at a great economy in expense and effort.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 5
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $25,843 | 2 | 2 | 4 | 2 | 1-1/3 | 3-1/3 | -- |
| FY 1956 | $25,643 | 2 | 2 | 4 | 2 | 1-1/3 | 3-1/3 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral Bacteriology LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR - 6 SERIAL NO.
6. Relationship of the oral spirochetes to the etiology of ulcerative gingivo-stomatitis PROJECT DESCRIPTION:
7. Dr. Edward G. Hampp PRINCIPAL INVESTIGATOR(S)
8. OTHER INVESTIGATORS
9. PROJECT DESCRIPTION

Project: Relationship of the oral spirochetes to the etiology of ulcerative gingivo-stomatitis.

Objectives: Development of methods for routine isolation and pure cultivation of the oral spirochetes associated with ulcerative-gingivo stomatitis. To determine their relationship, if any, to the etiology of this disease by the use of animal and serologic technics. In addition, many bacteriologic aspects of the pure cultures of spirochetes are being investigated. Secondary to the main project and along with the cultivation experiments on the oral spirochetes, attempts are being made to isolate and cultivate Treponema pallidum on artificial culture medium.

Methods Employed: The oral spirochetes are isolated in a modified hormone agar containing ascitic fluid and glutethione by a well technic developed in this laboratory. By modification of this method all of the morphologic types of oral spirochetes peculiar to man have been grown in pure culture on artificial culture medium.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 6
SERIAL NO.

9. PROJECT DESCRIPTION: (Continued)

Major Findings: Borellia buccale, the last morphologic type of oral spirochete, has been isolated and cultivated for the first time on artificial culture medium. Attempts are being made to develop a routine and reproducible method for the isolation and pure cultivation of this organism. In this respect a moderate amount of success has been encountered; however, due to its complex growth requirements a considerable amount of study is required in the solution of the problem.

Studies were conducted during this period on the preservation of Borrelia buccale by freezing in a suitable menstrum at -25 C. as well as by freeze-drying methods. Some success was encountered by the former method; however, the latter method was not very productive and work is still in progress in this respect.

Studies were also conducted on technics for isolation and pure cultivation of Treponema pallidum; these organisms survive 4 to 12 days in our medium employed for the Borrelia buccale and retain typical morphologic characteristics as well as show evidence of cell multiplication.

Significance to DENTAL Research: These investigations to date have resulted in the isolation and pure cultivation of all the morphologic types of oral spirochetes associated with ulcerative-gingivo stomatitis. As a result, these organisms can now be used to determine whether or not the oral spirochetes are the etiologic agents of the disease. Ulcerative gingivo-stomatitis has been studied for over 70 years and the spirochetes have been suspected as the etiologic agents; however, proof was lacking since only the smaller oral treponemes had been cultivated and Borellia vincentii and Borrelia buccale could not be obtained in pure culture for laboratory investigations.

In the field of microbiology these studies have contributed to a small extent toward a better understanding of a group of little understood organisms, the family, Spirochaetaceae. In this respect, methods and technics developed for the oral spirochetes have been transposed to the study of Treponema pallidum with a modest amount of success.

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December 1954

Analysis of NIH Program Activities

Project Description Sheet

NIDR 6
SERIAL NO.

9. PROJECT DESCRIPTION: (Continued)

Proposed Course of Project: During the next calendar year investigations will be directed toward the development of a routine, reproducible technic for the isolation and pure cultivation of Borellia buccale to finish up this project. Also, studies will be initiated to approach the problem of whether or not the spirochetes are the etiologic agents responsible for ulcerative-gingivo stomatitis. Along with this portion of the problem some investigations will be conducted toward a sound method for classification of this group of spirochetes.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 6
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $639 | 0 | 0 | 0 | 0 | 0 | 0 | -- |
| FY 1956 | $700 | 0 | 0 | 0 | 0 | 0 | 0 | -- |

12. BUDGET ACTIVITY:

RESEARCH [*] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 10)

American Dental Association through a conditional gift fund to PHS pays the salary of Dr. Edward G. Hampp.

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None

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ecember 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF ORAL BACTERIOLOGY — LABORATORY OR BRANCH

3. SECTION
4. LOCATION (If Other Than Bethesda)
5. NIDR ? — SERIAL NO.

6. Use of chemotherapeutic agents in studies on the control and etiology of caries. — PROJECT TITLE

7. Dr. Robert J. Fitzgerald — PRINCIPAL INVESTIGATOR(S)

8. Mr. Harold V. Jordan — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Use of chemotherapeutic agents in studies on the control and etiology of caries.

Objectives: This project has a twofold objective, (a) to discover chemotherapeutic agents of potential usefulness in the control of dental caries in the general population and (b) by an analysis of the anti-caries effects and the in vitro and in vivo activity of various antibiotics against specific types of microorganisms to assess the relative importance of these organisms in the etiology of caries.

Methods Employed: Antibiotics and other antimicrobial agents are incorporated into the food or drinking water of rats fed diets which are highly cariogenic. During the course of the study samplings are made of the oral microflora and the prevalence of representative types of microorganisms is recorded. At the conclusion of the experiment the rat teeth are scored for caries.

Major Findings: The results of a typical antibiotic-rat caries test can be summarized as follows: the drugs were mixed in the food at the indicated level per gram; the caries score represents the relative severity of caries in the animals. Penicillin (10 units) score, 0.8, Erythromycin (10 μg)

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 7
SERIAL NO.

9. PROJECT DESCRIPTION: (Continued)

Major Findings (Continued)

score, 1.9, Zinc Bacitracin (10 units), score, 6.1, Carbomycin (10 μg) score, 10.0, neomycin (10 μg) score, 13.8, Controls score, 15.8.

Of unusual interest is the fact that Erythromycin and Carbomycin, which are reported to have essentially the same spectrum of anti-bacterial activity, differ so markedly in their anti-caries activity.

Significance to DENTAL Research: There are two ways in which these studies may influence the course of Dental Research. The demonstration that caries may be readily controlled by the use of appropriate chemotherapeutic agents may assume some significance to the large segment of our population which will not receive the benefits of fluoridation. The use of antibiotic dentifrices might be desirable under conditions of national emergency for military personnel in the field or at sea where dental care is not available. The second significant aspect of the work is that the use of antibiotics has permitted us to narrow down the list of suspected microbial factors in the production of caries. For example, the fact that agents like penicillin and bacitracin are effective anti-caries agents permits the conclusion that the gram negative flora of the mouth is not involved. Similarly it has been possible to exclude yeasts, viruses and fungi principally on the basis of the antibiotic findings.

Proposed Course of Project: Considerable emphasis will be devoted to the bacteriological aspects of this problem during the coming year in an attempt to determine the groups of microorganisms actually responsible for caries. Advantage will be taken of the finding that agents such as Carbomycin and Erythromycin differ in their anticaries activity and yet have similar antibacterial spectra to conduct an extensive bacteriological investigation on the in vivo and in vitro effects of these agents on the oral microflora. For this work it will be necessary to intensify efforts to identify and clarify the oral microflora and the aid and experience of others familiar with this work will be enlisted (Rogosa, Shiota).

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 7
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $15,523 | 2 | 2 | 4 | 1 1/6 | 1 1/6 | 2 1/3 | -- |
| FY 1956 | $14,721 | 2 | 2 | 4 | 1 1/6 | 1 | 2 1/6 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral Bacteriology LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 8 SERIAL NO.

6. Effect of Skim Milk Powder Diets on Oral Bacterial Flora of Rats and the Relations to Experimental Dental Caries. PROJECT TITLE

7. T. Shiota PRINCIPAL INVESTIGATOR(S)

8. F. J. McClure, J. Folk and M. Rogosa OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Objectives: The objective of this project is to determine the effect of certain skim milk powder diets on the microbial oral flora with specific reference to the knowledge of associative and/or causative microorganism(s) of experimental dental caries. Operationally the project is approached at several levels of research and produces a variety of problems. The levels are: (1) the understanding of the microbial flora; (2) study of the constituents of skim milk powder diets on the growth of microorganisms; and (3) investigation of the metabolism of oral microorganisms.

STUDY ON THE MICROBIAL ORAL FLORA OF RATS

Purpose: The purpose of this study is to determine the effect of skim milk powder diets on the oral bacterial flora.

Methods: From rats placed on cariogenic and non-cariogenic diets, samples were taken by swabbing tooth surfaces and enumerating for lactobacilli; streptococci and coliform, using selective isolation media. The teeth were examined and scored for the prevalence of caries.

Findings: In the past year, after running bacterial counts on rat experiments, it has become evident that: (1) it is desirable that a better technique be used in the sampling of bacterial materials, and (2) additional isolation media should be used in the enumeration of microorganisms besides lactobacilli, streptococci and coliforms.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 8

Significance: (The rat is the most widely used experimental animal in dental caries studies.) For a better understanding of caries etiology it becomes necessary to determine the types and numbers of microorganisms present in the oral cavity of rats and how they are influenced by cariogenic and non-cariogenic diets.

Proposed Course of Problem: In the next calendar year, it is hoped that a better method can be developed to determine qualitatively and quantitatively the microorganisms present in the rat oral cavity. The approach may be radically different from the swab technique which has been employed. This will be the *in toto* removal of the jaws from the rats, thereby fully exposing the teeth with subsequent samplings by scraping the most likely caries sites for bacterial materials.

## THE EFFECTS OF SKIM MILK POWDER DIETS ON THE GROWTH OF ORAL LACTOBACILLI FROM THE RATS

Purpose: There are two major problems in this phase of the study, namely, (1) to determine the growth promoting effect of skim milk powder, and (2) to examine the growth inhibiting effects of cariostatic agents incorporated into the rat diets in rat oral lactobacilli.

Methods: Some of the constituents of skim milk powder diets are being tested for their effect on the growth of rat oral lactobacilli. This effect is determined either by determining the amount of acid produced by alkali titrations or by measuring the cell density by turbidimetric measurements.

Findings: (1) To date, various heated sugar amino acid mixtures were used to replace the factor(s) in skim milk powder for the growth of some rat oral lactobacilli without success. However some progress has been made in purifying the skim milk powder possessing growth nutrient(s); (2) a portion of the investigation on the antibacterial effects of some cariostatic agents on the growth of lactobacilli has been completed and is in progress for publication. Twenty homofermentative and twenty heterofermentative rat oral lactobacilli were tested for their sensitivity towards fluoride. The rate and extent of growth of oral lactobacilli were decreased as the sodium fluoride concentration was increased (50 to 200 ppm NaF). Also the inhibition of growth by sodium fluoride increased as the pH of the growth medium was decreased. At pH 7.2, fluoride concentration of about 47 ppm F caused a 50 per cent reduction in the growth of strain 8AT, whereas at pH 4.3, the fluoride concentration was reduced to 5.4 ppm F. Sodium fluoride was bactericidal at high concentrations.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 8

Significance: Information on the nutritive requirements of lactobacilli or for any other microorganisms of the mouth can only result in the better understanding of the complexity of the oral flora. The investigation on the antibacterial effects of cariostatic agents may give more information on the mode of action of these agents. This is but one tool which can be used to elucidate the role of microorganisms in caries etiology.

Proposed Course of Problem: The work on the effect of sodium fluoride on oral lactobacilli has been completed. At the present no definite plans are made to extend this type of study to include other cariostatic agents. However, the work on milk powder containing a possible growth factor(s) for the growth of some lactobacilli will be continued. It is hoped that with a technical aid progress along the lines of purification and identification of the growth factor(s) in skim milk powder can be made in the next year.

## THE BREAKDOWN OF GLUCOSE BY HOMOFERMENTATIVE LACTOBACILLI ISOLATED FROM THE ORAL CAVITY OF RATS

Purpose: The purpose of this study is to determine (1) the mechanism of glucose breakdown, and (2) the effect of some cariostatic agents on glucose breakdown by homofermentative lactobacilli.

Methods: In order to determine the enzymatic makeup of these microorganisms, the usual manometric, spectrophotometric and other biochemical techniques are being employed.

Findings: To date several experiments using a fluoride resistant strain of homofermentative rat oral lactobacilli (strain pp 3) have been carried out. A cell-free extract of this strain will metabolize anaerobically, glucose, glucose-6-phosphate, fructose-1,-6, diphosphate, and gluconate. Glucose, glucose-6-phosphate and gluconate required adenosinetriphosphate.

Significance: An elucidation of the mechanism of glucose breakdown will give information on the site of inhibition by those cariostatic agents inhibiting glucose breakdown.

Proposed Course of Problem: Before any information on the site of inhibition can be obtained, it is first necessary to establish the mechanism of glucose metabolism. Hence in the next calendar year, investigations will be carried out to determine the mechanism of glucose metabolism.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 8
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $6,076 | 1 | 2 | 3 | 1/3 | 2/3 | 1 | -- |
| FY 1956 | $6,043 | 1 | 2 | 3 | 1/3 | 2/3 | 1 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17.

13. Dr. Shiota paid from American Dental Association gift fund.
NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. Functional Morphology LABORATORY OR BRANCH

3. SECTION 4. LOCATION (IF OTHER THAN BETHESDA) 5. NIDR-9 SERIAL NO.

6. Mineral Metabolism of Bone. PROJECT TITLE

7. Dr. William B. Savchuck PRINCIPAL INVESTIGATOR(S)

8. OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Mineral metabolism of bone.

Objectives: To study the mineralization of bone during regeneration.

Methods employed: Using the rat as a test animal, mineralization is followed autoradiographically and histologically in the molar socket or the surgically fractured and reduced humerus. The strength of the repaired humerus is compared with the sound one. The effect of strontium on the strength of the long bones in a large colony of an inbred strain of rats is measured.

Major Findings: Elaboration of surgical and autoradiographic techniques. Evaluation of the microtome sectioning of undecalcified bone vs. a grinding-polishing technique. Designing special extraction forceps for removing the rat molar intact. Adapting a tensilgraph for measuring the breaking strength of bones, using a specially designed specimen yoke.

Significance to DENTAL Research: To obtain basic information on the effect of minerals and socket implants upon ossification during bone healing.

Analysis of NIH Program Activities

Project Description Sheet

NIDR-9
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Proposed Course of Project: Calcium-45 will be administered to rats at various intervals after molar extraction. The effect of socket implants of Gelfoam and strontium on mineralization will be studied.

The tensilgraph will be standardized by measuring the failure load of hundreds of young and adult rat bones using different spans of specimen yoke and various static loads.

The bones of rats on a strontium regimen will be analyzed spectrographically.

The healing of a uniform fracture lesion will be followed using Strontium-89 as a mineralization indicator.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-9
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $13,842 | 1 | 1 | 2 | 1 | 1 | 2 | |
| FY 1956 | $13,742 | 1 | 1 | 2 | 1 | 1 | 2 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATION UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 OR 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1).

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO. (S) IF WITHIN NIH).

Complements -- Dental tissues, fluorine and mineral metabolism,
Robt. C. Likins. (NIDR-17).

15-17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Functional Morphology LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-10 SERIAL NO.

6. Electron Microscopy of Normal and Diseased Dental Tissues.
PROJECT TITLE

7. Dr. David B. Scott
PRINCIPAL INVESTIGATOR(S).

8. Dr. James J. Kennedy
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Electron Microscopy of Normal and Diseased Dental Tissues.

Objectives: To determine the ultra-fine structure of normal dental tissues, and to study the changes in structure effected during malformation and disease.

Methods Employed: Thin sections or replicas of various tissues, primarily normal or carious enamel and dentin, are prepared by special techniques for observation under the electron microscope. Some ground and microtomed sections are also made for optical microscopy.

Major Findings: The sequence in which enamel and dentin is softened and invaded by bacteria during decay was observed in the electron microscope. Caries progress was observed from the softened but not disintegrated external surface regions of enamel into progressively more affected structure of the internal portion of the lesion. The first observable change appeared to be a mineral loss. After softening, bacteria penetrated the remaining matrix and progressed in a random fashion. A more definite pattern of bacterial invasion was observed in dentin where organisms passed first into the dentinal fibers, second, out into the dentinal tubules, and finally dispersed into the matrix.

Analysis of NIH Program Activities

Project Description Sheet

NIDR-10
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Major Findings: (Cont.) In the completion of an experiment concerned with the possibilities of studying organic matrices in calcified tissues in lower animal forms, it was shown that conchiolin isolated from mollusc shells may serve as a useful test object. Observation of thin sections of demineralized specimens has demonstrated that the matrix in mollusc shell bears a striking resemblance to that in human enamel, and that there are definite species differences between molluscs at various levels on the phylogenetic scale. It is evident that basic information on both matrix development and calcification can be derived from experiments with such lower forms, which are anatomically quite simple, and which can be subjected to variations in development by altering the external environment. This work was carried out in collaboration with Dr. Gerrit Bevelander, of the New York University Dental School, and no further plans have as yet been made.

In recent years replica studies were directed at determining changes in tooth surface structure with advancing age, as background for subsequent work on dental caries, cuticular membranes, and epithelial attachment. At the same time, work in other laboratories, primarily concerned with development of a system of age determination by means of teeth for medico-legal and anthropological use, indicated that there are some six morphological features of teeth which undergo perceptible changes with age. It was felt that further investigation of these latter features might provide useful information on natural age changes in dental structures, which must be taken into account in studies of both normal and diseased tissues. At the same time, because of previous efforts to systematize surface replica findings for age determination, both for medico-legal use and for the aging of undocumented laboratory specimens, it was of interest to explore the potentialities of the proposed new system. It was found after optical microscopy of a large series of ground sections that five of the six features bear a direct relationship to chronological age, and that the recommended system of age determination seems to offer little advantage over a visual estimate by an experienced observer.

Significance to Dental Research: The exact structure of mineralized tissues has so far not been determined. This fundamental problem has long existed in optical microscopy, and the electron microscope has opened new avenues of approach. Investigations with the electron

Analysis of NIH Program Activities

Project Description Sheet

NIDR-10
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to Dental Research: (Con'd).

microscope have contributed to a better understanding of the organic constituents of enamel and dentin, and their development. The inorganic component is still largely unexplored. Until a precise definition of the basic structure of enamel and dentin is derived, it will be difficult to explain completely the phenomena which occur in malformation and disease. Even though much of the necessary fundamental information is still lacking, it has been feasible to investigate the structural changes which take place in dental caries, in an attempt to provide new data relative to the various ideas on the sequence of events in the disease which have been developed from earlier optical microscopy. Such information is essential to the clarification of current concepts on the etiology and course of dental caries.

Proposed course of project: Reevaluation of the evidence thus far accumulated on the structure of enamel has indicated the need for further information on its basic morphology. In the next year it is planned to concentrate on exact definition of prism contours, crystal structure, and outer surface characteristics. Work will also be continued on some aspects of dental caries.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-30
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $18,972 | 2 | 2 | 4 | 1 1/3 | 1 | 2 1/3 | |
| FY 1956 | $19,912 | 2 | 2 | 4 | 1 1/3 | 1 2/3 | 3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1).

Certain aspects of this project will be carried out in collaboration with Section on Molecular Biophysics, Laboratory of Physical Biology, National Institute of Arthritis and Metabolic Diseases, Dr. R.W.G. Wyckoff, Chief.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. NIDR-10
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Scott, David B. and Albright, J. T.: Electron Microscopy of Carious Enamel and Dentine. Oral Surgery, Oral Medicine and Oral Pathology 7:64 (1954)

Scott, David B.: Electron Microscopy of Enamel and Dentin. In press, Symposium on Mineralized Tissues, N. Y. Acad. of Science.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF FUNCTIONAL MORPHOLOGY LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-11 SERIAL NO.
6. Electron Microscopy of sectioned connective tissues and their derivatives. PROJECT TITLE
7. Dr. James J. Kennedy PRINCIPAL INVESTIGATOR(S)
8. None OTHER INVESTIGATORS

9. PROJECT DESCRIPTION

Project: Electron Microscopy of sectioned connective tissues and their derivatives.

Objectives: The observation of the ultra-microscopic detail of connective tissue and their derivatives, with special emphasis on the morphology of their component fibrils.

Methods Employed: Specimens of bone, cartilage, tendon, subcutaneous connective tissue, periodontal membrane and other tissues rich in collagen are prepared and sectioned according to existing techniques and examined in the electron microscope. Procedures for separating the fibrils from surrounding ground substance are being developed.

Major Findings: The major finding during the preliminary phase of this program has been the observation of the tubular character of many sectioned collagen fibrils in tissues so far examined. It has been possible also, through sectioning, to study the internal surface of the hollow collagen fibrils when complete separation of fibrils from ground substance did not permit observation of external surface detail.

Project Description Sheet

NIDR-11
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to DENTAL Research: Connective tissues and their derivatives play an important part in the structure and function of the entire body. Collagen fibers are a characteristic feature of these tissues. From a dental standpoint, collagen is found in dentin, pulp, periodontal membrane, gingiva, bone, and surrounding soft tissues. A greater understanding of the ultra-fine morphology of normal connectivw tissue within these structures is of utmost importance in determining the mechanisms involved in diseases affecting them.

Future Course of Project: Intensive examination will be made in the next year of as many connective tissues as possible to determine whether these characteristics so far observed are typical of fibrous components of all connective tissues. Attempts will be made to isolate more completely the various phases of these tissues for more detailed study. Specimens of normal animal connective tissue are readily available. As the study progresses, more specimens of human tissue will be needed.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-11
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $10,140 | 1 | 2 | 3 | 2/3 | 1 | 1 2/3 | |
| FY 1956 | $12,087 | 1 | 1 | 2 | 2/3 | 1 1/3 | 2 | |

12. BUDGET ACTIVITY:

| | | | |
|---|---|---|---|
| RESEARCH | [X] | ADMINISTRATION | [ ] |
| REVIEW & APPROVAL | [ ] | TECHNICAL ASSISTANCE | [ ] |

13 - 17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Functional Morphology Laboratory LABORATORY OR BRANCH
3. SECTION
4. LOCATION (OTHER THAN BETHESDA)
5. NIDR-12 SERIAL #

6. Genetic Factors in the Development of Oral Structures and Oral Diseases.
PROJECT TITLE

7. Dr. Carl J. Withop, Jr.
PRINCIPAL INVESTIGATOR(S)

8. None
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Application of Genetics to Oral Diseases.

Objectives: To find what role genetically determined factors play in dental caries, in certain positions of the tongue that affect denture stability, and investigation of rare dominant traits (amelogenesis imperfecta and dentinogenesis imperfecta) to determine their prevalence and mutation rates.

Methods Employed: Rats of the Hunt Strain of caries resistant and caries susceptible type. are being investigated for anatomical differences in the fissure sizes that appear to have been differentiated during the selection of these two types. The part played by this anatomical difference is being estimated by varying particle size of the diet in relation to fissure size. The role secretor factor may play in susceptability or resistance to dental caries is being investigated. A study is being arranged among students in a nearby university to test the hypothesis that certain tongue positions are genetically determined. Pedigrees of over 25 families in the State of Michigan with amelogenesis imperfecta and dentinogenesis imperfecta have been made. Linkage studies have been made in these families for blood groups, secretor factors and PTC taste tests. A method for growing ameloblasts and odontoblasts in

Analysis of NIH Program Activities

Project Description Sheet

NIDR-12
SERIAL NO.

9. PROJECT DESCRIPTION: (CONTINUED).

Methods Employed: (Contined)

tissue culture is being investigated. Comparisons of growth under different conditions of these cells from normal teeth and cells from teeth affected with the above conditions are being made. Histochemical observations are being made on teeth affected with these traits.

Patient material:

1. 91 patients have been investigated in Michigan.
2. Outpatients: (Bethesda)
   Number of patients 3
   Number of visits 3

Major findings:

1. Fissure size in the susceptible type of Hunt strain rats are wider and the cusp width is narrower than corresponding measurements made on the caries resistant type. These differences are statistically significant.

2. Out of 26,790 school children surveyed in Michigan, 5 had dentinogenesis imperfecta and 3 had amelogenesis imperfecta. Amelogenesis imperfecta occurs about once in 10,000 individuals and dentinogenesis imperfecta occurs about once in 5,000 individuals.

3. Amelogenesis imperfecta is not a single entity but shows variation in clinical appearance, penetrance of the gene(s) involved and type of genetic inheritance. Dentinogenesis imperfecta appears to be more uniform in its clinical appearance and transmission.

4. Tissues from normal teeth have been maintained in tissue culture in a viable state for a period of three weeks. Indications of dentin formation have been observed in some cultures.

Significance to DENTAL Research:

The role genetically determined factors play in oral development and oral disease have been but vaguely understood. Dental caries is a multifactorial disease, and in rats at least, an inherited susceptability and resistance to dental caries has been demonstrated.

Project Description Sheet

NIDR-12
SERIAL No.

9. PROJECT DESCRIPTION: (CONTINUED)

Significance to DENTAL Research: (Continued)

Just what factors in this inheritance influence the course of the disease has not been determined. About 30% of individuals do not have proper function in a well made lower denture. It has been shown that this difficulty is the result of an abnormal functional movement that may be determined by genetic factors. While the two rare dominant traits of amelogenesis imperfecta and dentinogenesis imperfecta are not in themselves problems of Public Health scope, as they affect relatively few individuals, certain characteristics of these diseases may offer clues to other problems. For example, these individuals rarely have dental decay. Dentinogenesis imperfecta has some of the same clinical features, limited to the teeth, as are found in osteogenesis imperfecta. These two traits are excellent indicators of mutations in a population. Present mutation rates may be compared with mutation rates of these same traits in future years.

Proposed course of project:

1. The main problem for the coming year will be to perfect the growth of normal and abnormal dental tissues in vitro.

2. A survey of Maryland school children for hereditary traits in dentition is being made in conjunction with a survey on dental decay during the months of January and February.

3. Histological, histochemical and ultramicroscopic examinations of abnormal teeth will continue. Linkage studies in the families will be continued. Similar studies are being carried out on the G/L strain of mice.

4. Investigations on the functional movements of the tongue will be started in March.

5. Measurements on anatomical differences in the Hunt strain of rats will be continued.

6. A pilot experiment on the relation of secretor factor to dental caries will be started next year.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-12
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $6,796 | 1 | 1 | 2 | 1/3 | 1/2 | 1 1/3 | |
| FY 1956 | $8,646 | 1 | 1 | 2 | 2/3 | 2/3 | 1 1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. NIDR (INSTITUTE) 2. Laboratory of Functional Morphology (LABORATORY OR BRANCH)

3. _____ (SECTION) 4. _____ (LOCATION (IF OTHER THAN BETHESDA)) 5. NIDR - 13 (SERIAL NO.)

6. Development and application of histochemical methods in the study of protein groups and enzyme activity of normal and abnormal tissues. (PROJECT TITLE)

7. Dr. Marvin S. Burstone

8. None (OTHER INVESTIGATORS)

9. PROJECT DESCRIPTION:

Project: Development and application of histochemical methods in the study of protein groups and enzyme activity of normal and abnormal tissues.

Objectives: The object of this project is to develop new histochemical procedures and modifications and apply them in an attempt to demonstrate chemical differences and characteristics of normal and abnormal tissues.

Methods Employed:

A. Histochemical methods for the visualization of protein groups. This consists of evaluating existing procedures and devising new methods and modifications. It should be pointed out that some of the older protein methods (Millon, Ninhydrine, Xanthoproteic) are essentially unsatisfactory for microscopic histochemistry.

B. This involves the use of some of the newer azo-coupling methods for demonstration of enzymes, namely esterases. Use of frozen dried tissue makes it possible to use some poorly hydrolyzed naphtholic ester substrates which are unsatisfactory with conventionally fixed tissues.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 13
SERIAL NO.

9. PROJECT DESCRIPTION: (CONTINUED)

Major Findings:

A. Four histochemical procedures: the dinitrofluorobenzene, the ninhydrin-Schiff, the alloxan-Schiff, and the chloramine-Schiff methods have been found to be of use for the microscopic demonstration of certain protein groups on tissues. Good chromogenic results were observed in a variety of tissues of several species (rat, mouse, rabbit, man) (Jour. Histochem. Jan. 1955).

B. High esterase activity of taste bud epithelium (rabbit) has been observed in frozen-dried specimens with a number of complex phenolic and naphtholic ester substrates (alpha-naphthyl butyrate, alpha-naphthyl propionate, naphthol AS acetate, alpha-naphthyl acrylate). This project in part represents an evaluation of some of the earlier observations on enzyme activity of taste buds reported by Bourne (Internat. Rev. Cytol. 1953).

C. A study of acetone fixed mouse and rat salivary glands reveals serous and mucous cells to be negative (except for serous cells of the tongue), with a number of esterase substrates (naphthol AS acetate, alpha-naphthyl acelate, alpha-naphthyl butyrate, alpha-naphthyl propionate). However, with frozen-dried tissues, discrete areas of activity are noted. Generally speaking, the active areas are associated with the more terminal portions of ducts and "special serous cells" of the submaxillary gland. Of interest is the observation that serous cells of the tongue are highly active (alpha-naphthyl acetate) while serous cells of the submaxillary gland are completely negative - even though they appear morphologically identical.

Significance to DENTAL Research: Since many normal and abnormal characteristics of tooth and bone structure are characterized by protein differences, newer methods and modifications may be of value in characterizing these differences which may not be apparent with routine morphological staining. Study of enzyme characteristics of salivary glands and other soft tissues may likewise elucidate basic information relating to the normal and abnormal morphological characteristics and functions of these structures.

R.P.C. - 1
December 1954.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 13
SERIAL NO.

9. PROJECT DESCRIPTION: (CONTINUED)

Proposed course of Project: Further study and evaluation of the present findings is planned. The protein methods will be employed to study human enamel dentine and bone. The enzyme procedures which reveal certain characteristics of animal salivary glands will be utilized to study normal and abnormal human salivary glands. The latter, of course, depends upon the availability of such material.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR - 13
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $17,252 | 1 | 2 | 3 | 1 | 1 | 3 | |
| FY 1956 | $14,938 | 1 | 2 | 3 | 1 | 1-1/3 | 2-1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 14

NONE

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

An Evaluation of Histochemical Methods for Protein Groups. J. Histochem. & Cytochem. (In press for Jan. 1955).

17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. NIDR (INSTITUTE) 2. Laboratory of Functional Morphology (LABORATORY OR BRANCH)

3. _____ (SECTION) 4. _____ (LOCATION (IF OTHER THAN BETHESDA)) 5. NIDR-14 (SERIAL NO.)

6. Histochemistry of Connective Tissues.
PROJECT TITLE

7. Harold M. Fullmer
PRINCIPAL INVESTIGATOR(S)

8. None
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Histochemistry of Connective Tissues.

Objectives: The objectives of this project is to use existing histochemical methods to determine chemical composition and the reactive groups of normal connective tissues, and the development of new methods to more accurately and expeditiously determine the chemical composition and reactive groups of connective tissues in normal and diseased states.

Methods Employed: Human and animal tissues are obtained from autopsy or surgical material. They are placed in various fixatives and embedded in paraffin or celloidin. Thin sections are then cut and placed on glass slides. Under controlled conditions, the sections are exposed to various reagents designed to determine the site and quantity of a reactive group or substance. New methods are needed to determine the site and quantity of many substances.

Major findings: Orcein reacts selectively with elastic tissue and basophilic degeneration. It was found that orcein does not behave as an acid-base dye; that it cannot be "blocked"by the use of any of the carbonyl, carboxyl, amine, or hydroxyl reagents; that its reactivity is enhanced when polar groups such as COOH, $NH_2$ OH, and C=O are not present;

Analysis of NIH Program Activities

Project Description Sheet

NIDR-14
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED)

Major findings:

and when a substance is "hydrocarbon-like". Also when orcein has combined with a substance, the compound is not broken up with acids, bases, ordinary oxidizing and reducing agents, or substances with a high dielectric constant such as urea. It is therefore a very stable compound. Acetylation of orcein renders it non-reactive with elastic tissue or basophilic degeneration.

Significance to Dental Research: Periodontitis and periodontosis are both diseases of connective tissues. It is believed that as more information is gained about the nature of normal connective tissues and their alterations in diseased states, we will be in a better position to treat and prevent these diseases. It is believed that "normal" connective tissues are best studied from a site not complicated by other disease states. For example normal connective tissues from the periodontal membrane would be very difficult to obtain since they are invariably inflammed.

Proposed course of project: Most of the time next year will be devoted to the development of necessary fundamental information on the histochemical characteristics of normal connective tissues. Procedures employed will be the application of additional dyes and reagents to sections of normal mucous membranes and skin, and to cases of basophilic degeneration.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-14
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $13,562 | 1 | 1 | 2 | 1 | 1 | 2 | |
| FY 1956 | $14,596 | 1 | 2 | 3 | 1 | 1 1/3 | 2 1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF FUNCTIONAL MORPHOLOGY
LABORATORY OR BRANCH

3. _____
SECTION
4. _____
LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-15
SERIAL NO.

6. The Cyclic Phenomenon of Periodontitis.
PROJECT TITLE

7. Dr. Harold R. Stanley
PRINCIPAL INVESTIGATOR(S)

8. _____
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The Cyclic Phenomenon of Periodontitis.

Objectives: To assess the relationship between the presence of local pathologic factors and the development and progress of periodontitis.

Methods Employed: Seven specific distances are designated for measurement at a magnification of 100x. The local pathologic factors, considered most apt to influence these distances are recorded with each measurement. Statistical methods are applied.

Major Findings: An initial study has shown that the alternating formations of scaly and nodular calculus on the tooth surface represents a cycle, which can be broken down into the following stages:

Stage I. Gradual breakdown of papillary structure.

Phase 1. Scaly calculus formation.
Phase 2. Nodular calculus formation.

Stage II. Severance of papillary structure.

Stage III. Recovery with rebuilding of a new papillary structure.

Analysis of NIH Program Activities

Project Description Sheet

NIDR-15
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to Dental Research: In order to treat periodontitis effectively, all basic information concerning its entire evolution must be ascertained.

Proposed Course of Project: To:

1. Verify this concept with the systematic study of more human jaws.

2. Correlate the progress of periodontitis clinically by observing the variations in shapes of subgingival calculi in roentgenograms.

3. Supplement the human study with a similar approach on animal material.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-15
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $ 8,976 | 1 | 1 | 2 | 2/3 | 2/3 | 1 1/3 | |
| FY 1956 | $10,042 | 1 | 2 | 3 | 2/3 | 1 | 1 2/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17.

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. LABORATORY OF FUNCTIONAL MORPHOLOGY LABORATORY OR BRANCH

3. _____ SECTION
4. _____ LOCATION (IF OTHER THAN BETHESDA)
5. NIDR - 16 SERIAL NO.

6. A Study of the Cytologic and Histologic Variations Found in Normal and Pathologic Oral Mucosae. PROJECT TITLE

7. Dr. Carl J. Witkop, Jr. and Dr. Harold R. Stanley PRINCIPAL INVESTIGATOR(S)

8. None OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: A Study of the Cytologic and Histologic Variations Found in Normal and Pathologic Oral Mucosae.

Objectives: Cytologic - To describe superficial abnormal cells and cell patterns found in clinically normal appearing oral mucosa. To define the term parakeratosis as it appears in slides of exfoliated cell scrapings.

To determine if variations in the normal menstrual cycle affects the cornification of oral epithelium.

To study the action of the nasal ciliated epithelium during various stages of the common cold.

Histologic - To designate the range of normal variation microscopically in oral mucosae. Morphology of the specimens is to be studied in respect to thickness of epithelium, length and breadth of rete pegs and the quantity of intracellular edema of individual epithelial cells.

Methods Employed: Cytologic - Scrapings from seven selected sites in the oral cavity are stained with Papinicolacu's stain and observed for any unusual types of cell patterns or abnormal appearing cells. Special stains are employed to identify mucin and glycogen in these cells.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 16
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Special biopsies are obtained at autopsy to correlate the cytological and histological findings. Exfoliated cells from patients with common colds are observed under the phase contrast microscope.

Histologic - Specimens of clinically normal oral mucosae are fixed in formalin in a stretched and non-stretched condition. Blocks of tissue are purposely oriented so that vertical, oblique and horizontal sections can be obtained. Special stains are utilized for necessary differentiation of anatomic components and histochemical contents.

Major Findings: Cytologic - Study of seventy six individuals at the University of Michigan Dental School showed that consistent normal patterns were present at the seven sites selected in the mouth. Weekly slides taken from normal young adult females showed there was no variation in the cornification of the oral mucosa attributable to variations in the normal menstrual cycle. Patients with gingivitis had decreased cornification of the gingival epithelium. Sex has no significant influence on variations in cell patterns. Frequent toothbrushing increases the cornification of the gingival mucosa.

Histologic - During the past year histologic information has demonstrated the fact that pathologic diagnoses are often applied erroneously to normal specimens of oral mucosae.

Significance to Dental Research: Cytologic - This method offers the possibility of determining the course of so-called pre-cancerous lesions in the mouth. It offers a method of following the course of a lesion without destroying it in situ as would be necessary if the biopsy method were employed. It may increase our knowledge of the action of ciliated epithelium. It also offers a relatively new method of diagnosis for oral lesions.

Histologic - By evaluating the range of normal histology of oral mucosae, in respect to the degree and quantity of intracellular edema, acanthosis and keratosis, more accurate information may be obtained as to whether or not such variations represent real oral manifestations of systemic disease.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 16
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Proposed Course of Project: Cytologic - At present we are trying to determine the source of a small round "active" looking cell that has been found in smears from cases of carcinoma of the lung and stomach. This cell also has been found in smears of normal appearing palatal mucosa. We are trying to characterize the cytology of parakeratosis. The source of several other abnormal looking cells found in normal appearing mucosa is also being sought.

Histologic - To collect and process as many specimens of oral mucosae as possible in order to delineate the exact limits of normal variation.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR - 16
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $10,761 | 2 | 1 | 3 | 1 | 1/3 | 1-1/3 | |
| FY 1956 | $ 8,778 | 2 | 2 | 4 | 2/3 | 2/3 | 1-1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17

NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral and Biological Chemistry LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 17 SERIAL NO.

6. Dental tissues, fluorine and mineral metabolism. PROJECT TITLE

7. Dr. R. C. Likins PRINCIPAL INVESTIGATOR(S)

8. Dr. F. J. McClure OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Dental tissues, fluorine and mineral metabolism.

Objectives: To obtain fundamental information concerning the mineral metabolism of the teeth and supporting structures as it relates to their physiology in health and disease.

Methods Employed: The effect of ingested fluorine on the skeletal and dental metabolism of calcium has been investigated in laboratory animals by means of radioactive tracer techniques. Specifically, the deposition and retention of calcium and fluorine has been determined in various parts of growing bone and in developing and mature enamel.

Major Findings: (1) A relatively high intake of fluorine did not affect the deposition or retention of calcium in bone but markedly altered its metabolism in enamel. (2) Fluorine is preferentially deposited in sites of active bone growth. (3) The metabolism of calcium and fluorine in calcified tissues is dissimilar.

Significance to Dental Research: It is quite probable that susceptibility to dental caries is determined, in part, by the chemical composition of the teeth. Accordingly, investigation of factors affecting mineral metabolism should provide information concerning the mechanism of the caries process and its prevention.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 17
SERIAL NO.

9. PROJECT DESCRIPTION: (Continued)

Proposed Course of Project: To further investigate the relation of fluorine to mineral metabolism in an attempt to elucidate the action of this agent in the inhibition of dental caries. It is anticipated that immediate efforts will be directed toward clarification of the role of fluorine on calcium metabolism in the dental enamel.

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December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 17
SERIAL NO.

11. BUDGET DATA

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $17,027 | 2 | 2 | 4 | 1 | 1 1/3 | 2 1/3 | --- |
| FY 1956 | 24,966 | 3 | 3 | 6 | 1 2/3 | 1 2/3 | 3 1/3 | --- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (By SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17.

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral and Biological Chemistry LABORATORY OR BRANCH

3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 18 SERIAL NO.

6. Non-dental physiological effects of fluorine. PROJECT TITLE

7. Dr. F. J. McClure and Dr. Nicholas C. Leone PRINCIPAL INVESTIGATOR(S)

8. Dr. I. Zipkin, Mr. H. G. McCann, and Dr. R. C. Likins OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Non-dental physiological effects of fluorine.

Objectives: To obtain basic data pertaining to fluorine metabolism and to accumulate data of significance in connection with the fluoridation of drinking water for dental caries control.

Methods Employed:

(a) Laboratory animals were subjected to different concentrations of fluorine in diet and drinking water in order to observe the physiological effects of the added fluorine on body functions and tissues.

(b) Human population groups consuming fluoridated and natural fluoride waters were studied with respect to their metabolism of the fluorine consumed in their drinking water.

(c) The metabolism of fluorine was studied in individuals having an impairment in health affecting particularly their renal function.

(d) The metabolism of fluorides was studied in animals placed under special nutritional stress.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

NIDR 18
SERIAL NO.

Major Findings:

(a) Histological examinations of tissues of fluorosed experimental animals thus far have produced no evidence of a damaging effect of fluoride, ingested in quantities comparable to or greater than what is ingested from fluoride drinking waters. Chemical analyses of skeletal tissues revealed the fact that upwards of five times the usual quantities of fluorine had accumulated in human bones without any systemic effects or impairment of skeletal function becoming apparent.

(b) Based on the fluorine analysis of urine specimens, individuals having an impaired renal function appear not to excrete fluorine via the urine as efficiently as do normal individuals. Albuminuria showed no correlation with the content of fluorine in urine specimens.

(c) Urinary fluorine analyses pertaining to population groups drinking fluoride waters brought out the following:

(1) Drinking of water fluoridated with sodium fluosilicate was associated with approximately 1.00 ppm of fluorine in urine specimens. This result is similar to the urinary fluorine analyses associated with drinking waters containing a similar amount of fluoride naturally and with waters fluoridated with sodium fluoride.

(2) Following a prolonged period of exposure of a population group to a high fluoride water (Bartlett, Texas), there has been a persistent and relatively high level of urinary fluorine, indicative of the fact that defluoridation of skeletal tissues is possible following withdrawal of fluorine from the ingestion. Experimental animal studies have also demonstrated this process of defluoridation of skeletal tissues during a post-fluoride period.

(d) The calcium metabolism of skeletal tissue of experimental animals was not affected by comparatively high levels of fluorine, as shown by the fact that this fluorine had no effect on bone growth, nor on deposition of calcium in bones. Different segments of the same bone retained different quantities of fluorine but deposited similar quantities of calcium.

Significance to DENTAL Research: The continuing experimentation with respect to the non-dental effects of fluorine has a primary function in assessing the public health procedure of fluoridation of drinking waters for caries control. Thus far no information has been obtained which would in any way deter the fluoridation of drinking water as a public health measure for the partial control of dental caries.

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December 1954

Analysis of NIH Program Activities

Project Description Sheet

NIDR 18
SERIAL NO.

Proposed Course of Project: Future research on this project will relate to the health status of human subjects who are exposed to fluoride in their drinking water. Human subjects will be studied to find out what effects an impairment in renal function may have on the metabolism of fluorine. Human autopsy specimens will be analysed chemically and the results correlated with their histology as affected by the subjects' exposure to fluoride in the drinking water. Experimental animal studies will be utilized to throw light on certain aspects of the basic metabolism of fluorine, particularly pertaining to calcified tissues.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $29,200 | 5 | 5 | 10 | 1 2/3 | 3 | 4 2/3 | - |
| FY 1956 | 20,294 | 3 | 5 | 8 | 1 | 2 1/2 | 3 1/2 | - |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Dr. L. N. Loomis, Laboratory of Pathology and Histochemistry,
National Institute of Arthritis and Metabolic Diseases.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. NIDR 18
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

1. Effect of Fluoride in Drinking Water on the Osseous Development of the Hand and Wrist in Children by H. B. McCauley and F. J. McClure, Public Health Reports 69:671, July 1954.

2. Cariostatic Effect and Metabolism of Ammonium Fluosilicate by I. Zipkin and F. J. McClure, Public Health Reports 69:730, August 1954.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral and Biological Chemistry LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA
5. NIDR 10 SERIAL NO.

6. The chemistry of teeth (Sub-Project A. Organic and Sub-Project B. Inorganic.) PROJECT TITLE

7. Dr. K. A. Piez (Sub-Project A. Organic) and H. G. McCann (Sub-Project B Inorganic) PRINCIPAL INVESTIGATOR(S)

8. None OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The Chemistry of teeth (Sub-Project A. Organic--Dr. K. A. Piez)

Objectives: It is the purpose of this project to determine the chemical nature of the organic portions of the teeth with particular attention to the proteins and their possible influence or role in the caries process.

Methods Employed: After separation of dentin and enamel by flotation, total insoluble organic material is isolated by decalcification employing a chelating agent in neutral solution. Methods of fractionation, such as boiling to prepare gelatin from dentin collagen, are used where possible. The proteins are analyzed by ion exchange chromatography and specific chemical methods.

Major Findings: The amino acid conetent of dentin protein was found to be very similar to that reported by other investigators using other methods. It is also similar to collagen isolated from other sources. Slight differences between dentin gelatin and total dentin protein were found. These differences can be explained by the destruction of some of the more labile amino acids during autoclaving and do not indicate nonhomogeneity of the dentin protein. However, the presence of a small insoluble residue after autoclaving that appears to be different from the total protein shows that small amounts of proteins other than collagen are present.

Attempts to improve the ion exchange method of amino acid analysis were made. One successful modification, using pH-gradient

Analysis of NIH Program Activities

Project Description Sheet

NIDR 19
SERIAL NO.

elution, was developed. It has certain advantages over the original procedure.

In collaboration with Dr. B. Witkop, National Institute of Arthritis and Metabolic Diseases, the ion exchange procedures for the separation of diastereoisomers previously developed were extended and used for a study of the stereochemistry of the cyclization of hydroxyornithine to hydroxyproline and of hydroxylysine to hydroxy-pipecolic acid.

Significance to DENTAL Research: Before the caries process can be fully understood it will be necessary to know the exact nature of the teeth. The organic portion has received little attention until recently but is now being studied more completely with some of the newer techniques. The development of improved methods of amino acid analysis aids such an investigation.

Basic studies with hydroxyproline and hydroxylysine promise to be of importance since these compounds are unique constituents of collagen. Collagen is the main protein in dentin and a major protein in the periodontal tissues. Also, it is now known that pipecolic acid and hydroxypipecolic acid are metabolites of lysine and hydroxylysine. Information of value in the study of the effect of dietary lysine on rat caries may result.

Proposed Course of Project: Larger quantities of dentin protein will be prepared so that the small amount of material dissolved during decalcification and the residue remaining after autoclaving can be investigated.

It is planned to prepare pure enamel protein and determine its composition.

Collaboration with Dr. Witkop will be continued along the lines already established.

In the more distant future it is hoped that studies on protein turnover in dentin and enamel, using tracer amino acids, can be undertaken. It is also desirable to investigate sound and carious teeth for a possible difference in their organic makeup.

- - - - - -

Project: The Chemistry of teeth (Sub-Project B. Inorganic--H. G. McCann)

Objectives: To learn as much as possible about the inorganic structure of the tooth and reactions of the inorganic portion with other substances such as fluorine in an endeavor to learn how the tooth may be protected against caries.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 19
SERIAL NO.

Methods: Previous studies have shown the various reactions that take place between powdered enamel and dentin and fluoride in vitro. Additional information on these reactions and the structure of enamel and dentin is being obtained by adsorption and rate studies with fluorides and by exchange studies with radioactive phosphorus. Rat tissues fluorized in vivo are being compared with similar tissues fluorized in vitro.

Major Findings: The major findings during the past year have been that fluorapatite is formed in vivo in bones and teeth by ingestion of fluoride, and that the fluorapatite so formed is distributed through the whole inorganic tissue, whereas fluorapatite formed in vitro is formed primarily on the surface and is readily exchanged with hydroxyl ion.

Significance to DENTAL Research: It has been conclusively shown that the exposure of the tooth to fluorine greatly reduces its tendency to become carious. Any insight into the chemistry of fluorine and dental tissues is an addition to the knowledge of the carious process and may contribute to the efficacy of the use of fluoride in caries control.

Proposed Course of Project: Solubility and exchange studies will be completed on samples of enamel, dentin, and bone from rats treated in vivo with fluoride. Rate of exchange with radioactive phosphorus and the effect of fluoride on this rate is being determined to see if fluorine affects the rate of recrystallization. The rate of reaction with fluoride, the nature of adsorption of fluoride, and the reaction with other fluorides, particularly stannous fluoride, will be investigated.

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December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 19
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $24.122 | 2 | 3 | 5 | 1 1/3 | 2 1/3 | 3 2/3 | - |
| FY 1956 | 21,771 | 2 | 3 | 5 | 1 1/3 | 2 | 3 1/3 | - |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Sub-Project A: Dr. B. Witkop, National Institute of Arthritis and Metabolic Diseases.

Sub-Project B: None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE

2. Oral and Biological Chemistry LABORATORY OR BRANCH

3. SECTION

4. LOCATION (IF OTHER THAN BETHESDA)

5. NIDR 20 SERIAL NO.

6. Chemistry of oral soft tissues
PROJECT TITLE

7. Dr. Bernard K. Forscher
PRINCIPAL INVESTIGATOR(S)

8. None
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Chemistry of oral soft tissues.

Objectives: This project is designed to study the chemical changes that occur in oral soft tissue during inflammation and to determine how systemic factors may affect susceptibility to inflammation or degree of intensity of inflammatory response.

Methods Employed: Rats are subjected to various treatments of a systemic nature. These treatments are based on previous clinical observations which might indicate a possible relationship between a systemic condition and a change in susceptibility towards inflammation of the oral soft tissue. Samples of oral tissue from the animals are analyzed chemically both before and after the region has been subjected to a standard irritant.

Major Findings: Due to the recent inauguration of this project, only preliminary results are available at this time. It has been found that the soft tissue of the hard palate of the rat is histologically similar to gingival tissue and thus, by reason of its quantity, accessibility and characteristic anatomy, is ideally suitable for these studies. Further, injection of minute amounts of xylene into this tissue results in the events of the classic inflammatory response, thus supplying a standard and reliable method for inducing inflammation in experimental animals. Treatment of adult rats with low levels of estrogen, testosterone or progesterone was found to have no detectible effect on concentrations of hexosamine, hydroxyproline, tyrosine, total nitrogen or non-protein nitrogen.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

NIDR 20
SERIAL NO.

Significance to DENTAL Research: In the mature human, periodontal disease is the greatest single factor responsible for loss of teeth. Further, those teeth which are lost due to degeneration of their supporting structures are usually sound. Assuming that the series of events encountered in the various stages of periodontal disease are the results of inflammation in this area, it is felt that elucidation of the chemical changes that occur in this tissue during inflammation and the changes that occur prior to the actual inflammatory response but which may predispose the tissue to such processes, will be of value in understanding the etiology of periodontal disease and in designing measures for preventing or reducing periodontal pathology.

Proposed Course of Project: Experiments on the effects of hormones on the composition of the normal tissue and on the course of the inflammatory response will continue. A detailed study will be made of the chemical changes that occur during inflammation in the normal animal. A colony of animals is now being developed for studies on the effects of age on tissue composition. Other systemic factors whose effects will be studied include: treatment with Dilantin Sodium, alloxan diabetes, general malnutrition and specific avitaminoses.

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December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 20
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $ 7,540 | 1 | 0 | 1 | 1 | 0 | 1 | - |
| FY 1956 | 13,455 | 1 | 1 | 2 | 1 | 1 1/3 | 2 1/3 | - |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Oral and Biological Chemistry LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 21 SERIAL NO.

6. Chemistry and physiology of the salivary secretions
PROJECT TITLE

7. Dr. I. Zipkin
PRINCIPAL INVESTIGATOR(S)

8. Dr. K. A. Piez
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Chemistry of saliva as related to dental caries in the human.

Objectives: To study the basic chemistry of the secretions of the salivary glands and of whole mixed saliva, and its relation to dental caries.

Methods Employed: Whole mixed saliva has been collected from children of Grand Rapids, Michigan and has been analyzed for total lactobacilli and streptococci, for sodium and potassium, for acid phosphatase activity and for citrate. The citrate content of saliva during the menstrual cycle has been studied since it has been shown that a relationship exists in the urine analysis for citrate and this cycle. Some of the Grand Rapids subjects were teen-age girls. Using Lashley cups it was possible to collect the parotid as well as the remaining extra-parotid saliva. These were analyzed for citrate.

Major Findings: It was shown that the citrate content of saliva was inversely related to the DMF scores. The lactobacillus counts were directly related to the DMF scores, so that the citrate content of saliva is decreased in the presence of a high lactobacillus count. There was no relation of salivary citrate to the menstrual cycle. Analysis of concomitantly collected parotid and extra-parotid salivas from adult males for citrate indicated that approximately 60% of the whole saliva is contributed by the parotid secretion.

Significance to DENTAL Research: Saliva is the milieu constantly bathing the tooth surfaces. Hence ionic surface exchange reactions between the teeth and saliva are possible. Fundamental knowledge on the organic constituents of saliva and their role in saliva is lacking. This basic information must

be obtained before any relations between the chemistry and physiology of salivary secretions and dental caries can be assessed. A corollary value in the study of the chemistry of saliva is its significance as a diagnostic medium in systemic disease.

Proposed Course of Project: To correlate data obtained on the sodium and potassium content of saliva with the DMF scores and to evaluate the acid phosphatase data in relation to the DMF scores. Attempts will be made to determine the rate of secretion and the chemistry of the parotid secretion in relation to whole mixed saliva. The basic chemistry of the proteins and carbohydrate complexes of saliva will be investigated.

R.P.C. - 2
December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 21
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $ 6,997 | 2 | 1 | 3 | 2/3 | 1/3 | 1 | - |
| FY 1956 | 20,006 | 2 | 2 | 4 | 1 2/3 | 1 2/3 | 3 1/3 | - |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. Oral and Biological Chemistry LABORATORY OR BRANCH

3. SECTION 4. LOCATION (IF OTHER THAN BETHESDA) 5. NIDR 22 SERIAL NO.

6. Biochemical and nutrition factors in experimental caries. PROJECT TITLE

7. Dr. F. J. McClure PRINCIPAL INVESTIGATOR(S)

8. Dr. J. E. Folk, Dr. I. Zipkin OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Biochemical and nutrition factors in experimental caries.

Objectives: The objectives of this project are:

a. To determine what dietary factors are associated with the etiology of dental caries.

b. To study biochemical and other special agents which may either promote or inhibit caries.

c. To study the nature of the carious process.

Methods Employed: Diets were compounded with the intention of producing variable cariogenic effects; dietary food components were modified particularly by heat-processing; the diets were fed to experimental rats for 60--90 days and the resulting development of caries ascertained. Special emphasis was placed on the effect of heat processing on skim milk powders and chemical methods were employed to study changes which occur in milk powders as a result of their commercial preparation.

Major Findings: A. The incidence and severity of caries in white rats, paralleled the severity of the heat treatment to which the milk powder component of the diet had been subjected.

b. Commercial dry whey powders present in rats' diets, produced a pattern of smooth surface caries, similar to that produced by diets containing skim milk powders.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 22
SERIAL NO.

c. Penicillin, iodoacetate, and sodium fluoride markedly inhibited smooth surface rat caries. Butter fat and lard added to the diet had significant caries-inhibitory effects. Ammonium fluosilicate inhibited occlusal surface caries.

d. Sodium lauryl sarcosinate inhibited both occlusal and smooth surface caries. Whereas dehydro acetate had no effect when added to a diet producing mainly occlusal surface caries, it had a remarkable potentiating effect when added to a different diet producing mostly smooth surface caries.

e. A comparison of three different strains of rats and rats of the same strain (Osborne-Mendel) but from two stock colonies, brought out notable differences in the extent of the caries and in the type of caries present among the different strains. The two colonies of Osborne-Mendel rats differed markedly in the extent and severity of caries and in the ratio of smooth-surface to occlusal-surface caries.

f. The addition of lysine to diets containing an autoclaved dry milk powder resulted in a marked reduction in the caries usually produced by feeding this diet to rats. This experimental result has prompted the study of changes in properties of milk powders which are brought about by autoclaving and especially the reactions involving lysine and glucose. Thus far methods have been developed for separating and identifying the products of the reactions between lysine and reducing sugars.

Significance to DENTAL Research: The evidence that heat-processing of a protein food particularly skim milk powder may have some association with the production of caries has justified the hypothesis that the quality of the protein in the diet may have a bearing on caries etiology. The successful production of smooth surface caries in rats fed diets containing dry whey powders added further support to this hypothesis. Inhibition of the smooth surface type of rat caries by three diverse agents, i.e. fluoride, iodoacetate and penicillin throws some light on the etiology of smooth surface caries and identifies it as being similar to the occlusal fissure type of caries. Reduction of the caries by butter fat and lard suggests that a physical property of the diet influences the caries through some process localized within the oral cavity. Reduction of rat caries by the anti-enzyme, sodium lauryl sarcosinate, is in agreement with limited evidence that this substance also inhibits human caries when incorporated into a tooth paste. The results with dehydro acetate are very provocative and have occasioned much additional research. An insight into the mechanism of caries may be forthcoming from these studies.

Inhibition of experimental rat caries by ammonium fluosilicate is of special interest because it indicates that this compound is suitable for fluoridation of communal water supplies.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 22
SERIAL NO.

The inhibition of caries by the amino acid lysine has not been reported heretofore and the result permits interest in new ideas concerning caries etiology.

The observation of differences in the caries which developed in rats from different strains emphasizes the basic physiological factors inherent in the animal which may influence caries production.

Proposed Course of Project: Future research in this project will be continued along lines similar to those of the past year. More emphasis will be placed on a study of the carious process itself as it develops in the tooth, this work to be carried on by Dr. Keyes. Some more attention also will be given to the production of caries in the hamster. Studies will continue on the chemistry of changes brought about in protein foods by heat processing and their possible relation to the production of caries. Special effort will be made to evaluate the role of lysine as a caries inhibitor and of dehydroacetate as a caries potentiating agent.

R.P.C. - 2
December 1954

Analysis of NIH Program Activity

Budget Data Sheet

10. NIDR 22
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $30,367 | 3 | 3 | 6 | 1 2/3 | 2 1/3 | 4 | - |
| FY 1956 | 28,005 | 3 | 3 | 6 | 1 2/3 | 2 | 3 2/3 | - |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

F. L. Losee, Naval Medical Research Institute, Bethesda, Md.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. Clinical Investigations LABORATORY OR BRANCH

3. _____ SECTION 4. _____ LOCATION (IF OTHER THAN BETHESDA) 5. NIDR - 23(C) SERIAL NO.

6. Response of periodontal tissues. PROJECT TITLE

7. Dr. Ralph S. Lloyd, Chief, Dental Department PRINCIPAL INVESTIGATOR(S)

8. Dr. E. M. Benjamin, Dr. A. W. Mann, NIDR Consultant, and Dr. Herbert Swerdlow OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Response of periodontal tissues.

Objectives: The objective is to determine the etiological factors, demonstrate their exact effect on the periodontal tissue and to compare the results of treatment of periodontal pathology.

Methods Employed: Cases selected for study are evaluated for possible relation of systemic and local disease. Rigid requirements are placed on the types of cases which are selected for each project.

1. A clinical study to compare methods of treatment of periodontal disease is under way. There is controversy whether the curettage method of treatment or the surgical treatment of periodontal disease is superior. Cases which are being studied must have a nearly full complement of teeth in good occlusion. They must have evidence of periodontal disease to the extent of bone destruction of the interceptal crest. These cases are going to be used as their own control. One side of the mouth will be treated by curettage and the other side will be treated surgically.

Case progress will be recorded by clinical observation, measurement of length of crown, periodontal pocket depth, and height of alveolar crest.

NIDR - 23(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Methods Employed: (Cont.)

2. The regeneration of periodontal tissue is being studied. Gingival pockets are created in an otherwise sound periodontium and they will be perpetuated for a definite period of time by placing bands on the teeth down into the artifically created pockets. After removal of the bands, different types of therapy will be used. The teeth then will be extracted and the results evaluated both clinically and microscopically.

3. The third approach is to evaluate occlusion and to try to relate its probable effect on the health of the supporting tissues. Adult patients with approximately 28 teeth present and a demonstrable though slight malocclusion and some gross evidence of periodontal disease are selected. The existing occlusion is recorded on an anatomical articulator and all necessary pre-treatment records taken. After functional analysis, the occlusion will be corrected and the clinical course of the disease charted.

Patient Material: (1954 Calendar Year)

Outpatients: Number of patients - 28
Number of visits - 374

Major Findings: No definite findings have been elicited so far, however, the initial work has been done in these experiments and shows promise. Most of the work which has been done so far has served the very real need of helping to properly delineate the method of study.

Significance to Dental Research: The advisability of using one or another method of treatment of periodontal disease is controversial. If a periodontal pocket can be created artificially and controlled in a definite manner, we will then have an ideal way in which the course and treatment of periodontal disease can be studied. It is also hoped that the role of occlusal trauma can be evaluated.

Proposed Course of Project: It is planned to continue this project in a manner similar to the above. During the coming year special emphasis will be placed on methods of objectively evaluating tissue response.

Budget Data Sheet

10. NIDR - 23(C)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $630 | 0 | 0 | 0 | 0 | 0 | 0 | |
| FY 1956 | $8,288 | 1 | 0 | 1 | 1 | 0 | 1 | |
| | | | | | | | | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1).

Drs. Ralph Lloyd, E. M. Benjamin and H. Swerdlow in the Dental Department of the Clinical Center participated in this research project.

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None

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. **Clinical Investigations** LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR - 71 SERIES

6. Growth and development of the head in normal and abnormal states in man (See 7) PROJECT TITLE

7. Dr. Samuel Pruzansky, National Institute of Dental Research PRINCIPAL INVESTIGATOR(S)

8. Dr. Ralph S. Lloyd, Chief, Dental Dept. Clinical Center and Dr. Jacob D. Subtelny OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Growth and development of the head in normal and abnormal states in man.

Sub-project:

(1) Cephalometric roentgenographic studies of normal and abnormal skeletal patterns of the head in man including their growth and function. The object of this investigation is to extend the usefulness of cephalometric roentgenography as a research instrument in analyzing the growth of the head in man and understanding the nature of deviations from the normal range of variation.

(2) Electromyographic patterns of activity of the muscles of mastication in normal and pathologic conditions in man. The purpose of this investigation is to analyze the synergistic contribution of the muscles of mastication to the movements of the mandible under varying conditions affecting the mobility of the lower jaw and the posture of the head.

(3) An appraisal of the effects of orthodontic therapy. The objective of this project is to investigate the mechanisms by which favorable or unfavorable results are achieved in orthodontic therapy.

(4) Design and analysis of speech appliances for patients with congenital and acquired anomalies of the hard and soft palate. The purpose of this study is to establish principles for the design of speech appliances in keeping with the structural and functional defects encountered in individual patients and to test the utility of such designs.

Project Description Sheet

NIDR - 24(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Methods Employed: The methods employed for documentation and analysis of clinical observations include cephalometric roentgenography, electromyography and articulated casts of the upper and lower dentition.

The standardized Broadbent-Bolton cephalometer is utilized for studies on older children and adults. Films are obtained in occlusion rest, wide open and during the sustained phonation of vowels. The effect of various prosthetic appliances on the posture of the mandible, hyoid bone, tongue and soft palate is analyzed from these films.

In addition, a modification of the Broadbent-Bolton cephalometer suitable for studies on infants is employed. The technic requires that the infants be sedated to insure immobility during the exposure. In the past five years several thousand examinations have been obtained by the procedure without any untoward experience.

The electromyographic equipment consists of Offner Electronics Company amplifiers and crystograph recorders utilizing four channels for simultaneous recording. The output of any one of the preamplifiers may be switched to the input of an oscilloscope or loudspeaker. Surface and needle electrodes are employed to pick up the electrical activity of the temporal and masseter muscles. The synergistic activity of these muscles is studied at rest, in mandibular movements, and in a variety of pathologic conditions affecting the neurophysiological control of the posture and motion of the lower jaw.

Articulated orthodontic casts of the upper and lower jaws serve as an inv luable adjunct to the other records in that they afford detailed information concerning important variables in occlusal relations. The significance of such variables can be correlated with the results derived from cephalometric and electromyographic studies. The casts are also subject to accurate measuration.

Patient Material: The following figures are approximate for 1954 since the complete clinic records are available only at the University of Illinois.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 24(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Patient Material: (Cont.)

(1) Outpatient admissions for serial growth studies including cephalometric roentgenography and impressions of the face and jaw . . . . . 450

(2) Outpatient admissions for electromyographic studies . . 10

(3) Outpatients under orthodontic therapy . . . . . 20

(4) Outpatients receiving speech appliances . . . . . 20 (pre-school age)

Major Findings: (1) The major findings of this project during the past year has been the development of a rationale for the management of micrognathia in newborn infants; the establishment of criteria for the timing of surgery for cleft palate; the formulation of diagnostic procedures for the analysis of velopharyngeal inadequacy, and the application of cephalometric roentgenography to the study of congenital anomalies of the neurocranium in infants.

(2) Various electromyographic patterns obtained during chewing were found to be characteristic of certain types of malocclusion. The contribution of the temporal and masseter muscles to the posture of the mandible has been analyzed.

(3) The mechanisms by which rapid changes are achieved through orthodontic expansion in bilateral cleft palate has been described.

(4) A technic for the fabrication and design of speech appliances for young children with unoperated cleft palate was developed.

Significance to Dental Research: (1) To obtain a better understanding of the normal ~~growth~~ processes of the growth of the head in man, it is necessary to analyze a variety of congenital and acquired anomalies affecting the growth and development of the head. Such information may aid in the development of better diagnostic methods and serve to establish a scientific basis for therapy.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 24(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to Dental Research: (Cont.) The synergistic contribution of
(2) the muscles of mastication to the movements of the mandible and to its postural control is essential for a complete understanding of the masticatory mechanism. The application of neurophysiological methods to the study of dental problems offers virgin territory for useful exploration.

(3) Recognizing that tissue response varies from patient to patient and that not all malocclusions are alike, it is essential that carefully documented experience be accumulated concerning the response of orthodontic patients of various ages to standard procedures of therapy.

(4) The patient with a cleft palate not amenable to surgical repair or the patient with an unsuccessful repair of the palate poses a special problem to the dental prosthetist. Further information is required to elucidate the morphological and functional deficiencies in such individuals. The design of speech appliances demands scientific analysis instead of the empiricism that generally prevails in this area.

Proposed Course of Project: During the coming year attempts will be made
(1) to further analyze the voluminous records accumulated on the serial growth studies of infants with various congenital anomalies of the head. Included are problems involving craniostenosis, progeria, Treacher-Collins Syndrome, and cleft palate and cleft lip.

(2) Further study of available electromyographic records on more than 100 subjects is under way in order to complete the mapping of the electrical activity of the temporal and masseter muscles under varying conditions. Of special interest is the contribution of these muscles to the motion of the mandible under different conditions of speed of motion, resistance to motion, posture during motion, range of motion, and relation to contiguous structures during motion.

(3) The forces of occlusion operating in individuals with cleft lip and palate is under investigation. The description of these forces and their significance to orthodontic therapy will be investigated.

Project Description Sheet

NIDR - 24(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Proposed Course of Project: (Cont.) (4) The next year will be devoted in part to a review of the history of young children with cleft palate of pre-school age who have worn speech appliances for six months or more.

Possible methods for the improvement of such appliances and their care may evolve from this study.

Budget Data Sheet

10. NIDR - 24(C)
SERIAL NO.

11.
BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $22,058 | 2 | 1 | 3 | 2 | 1 | 3 | |
| FY 1956 | $26,439 | 2 | 2 | 4 | 2 | 2 | 4 | |

12. BUDGET ACTIVITY:

RESEARCH [X] TECHNICAL ASSISTANCE [ ]

REVIEW & APPROVAL [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1).

(1) Division of Services for Crippled Children, Dept. of Pediatrics. Cleft Palate Center.
(2) Dept. of Physical Medicine and Rehabilitation, Cleft Palate Center. Dept. of Physiology of the Chicago Professional Colleges of the University of Illinois.
(3) Cleft Palate Center, Division of Services for Crippled Children.
(4) Cleft Palate Center, Division of Services for Crippled Children.
(5) Dr. Ralph Lloyd, Chief of the Dental Dept. in the Clinical Center and Acting Chief of NIDR Clinical Investigations Branch participated in this research project.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO(S). IF WITHIN NIH)

NONE.

Honors, Awards, and Publications Sheet

15. NIDR - 24(C)
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Slaughter, W. B. and Pruzansky, S. -"The Rationale for Velar Closure as a Primary Procedure in the Repair of Cleft Palate Defects." Plastic and Reconstructive Surg. 13: 341-357, May 1954.

Pruzansky, S. and Richmond, J. B. - "Growth of the Mandible in Infants with Micrognathia." Am. J. Dis. Child. 88: 29-42, July 1954.

Pruzansky, S. - "The Role of the Orthodontist in a Cleft Palate Team. Plastic and Reconstructive Surg. Vol. 13, July 1954.

Subtelny, J. D. - "The Significance of Adenoid Tissue in Orthodontia." Angle Orthodontist 24, No. 3, 59-69, April 1954.

Subtelny, J. D. & - "An Analysis of Orthodontic Expansion in Unilateral
Brodie, A. G. Cleft Lip and Cleft Palate Patients." Amer. Jour. of Orthodontics 40, No. 9, 686-697, 1954.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Elected Fellow of American Association for Advancement of Science.

Honorable Mention - Prize Essay Contest of the American Association of Orthodontists. May 1954. "The Width of the Nasopharynx and Related Anatomical Structures in Normal and Unoperated Cleft Palate Children." (to be published).

.P.C. - 1
ecember 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. Clinical Investigations LABORATORY OR BRANCH

3. _____ SECTION 4. _____ LOCATION 5. NIDR - 25(C) SERIAL NO.

6. General anesthesia (dental) baseline data. PROJECT TITLE

7. Dr. Edward J. Driscoll PRINCIPAL INVESTIGATOR(S)

8. Dr. Ralph S. Lloyd OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: General anesthesia (dental) baseline data.

Objectives: Dental general anesthesia is different from ordinary hospital anesthesias in several important respects:

1. The patients are ambulatory and not usually sedated.
2. The operations are performed in as light a plane as possible.
3. The operations are performed in or about the airway.

Because of these major differences, the background of knowledge in general hospital anesthesia is not for the most part complete, accurate or comparable.

There is a great need in dental anesthesia for a background of fundamental data concerning the alterations in the physiological mechanisms. The body functions may be altered within certain limits, beyond these limits exist great hazards. One of the purposes of the study is to define these limits. The accumulated data will also be used as a baseline of comparison for the many new drugs which are being proposed for use in oral surgery.

Methods Employed: Various oral surgical procedures are being performed under general anesthesia. (Sodium pentothal, nitrous oxide, Vinethene, Trilene combinations).

Physiologic status and alterations being measured are:

1. The effects of the drugs on blood pressure and pulse.
2. Cyanosis, syncope and other circulatory changes.
3. The response of the heart, arrythmias, etc.
4. Apnea, hypernea, tidal volume and other respiratory phenomena.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 25(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Methods Employed: (Cont.) The ordinary instruments employed in physical diagnosis such as sphygomanometer and stethoscope and routine methods are at present being employed. As the study progresses, special instruments like the electrocardiography, the sphgmotonograph, and possibly the oximeter may be employed.

Important technical data such as amount of drug used in units of time, length of operation and duration of sleep will be recorded.

Pertinent patient data, such as age, race, sex, emotional status, in relation to the conduct of anesthesia are being recorded, as well as post anesthetic sequalae, like headache, nausea and vomiting, depression and hiccoughs.

Patient Material: (1954 Calendar Year) The project has just been instituted the last two months of the calendar year. So far, training and orientation of personnel in dental anesthesia as well as a study of methods of accumulating and recording data have occupied our time.

Major Findings: So far there have not been enough patients employed in the the study for significant findings.

Significance to Dental Research: The search is constantly being made in dentistry for safer general anesthetics and without such baseline material the search has no foundation. The possibility also exists for improvement and refinement of present methods as well as laying a sound foundation for further anesthesiology research.

Proposed Course of Project: For the most part the initial study will be in gathering these data on various types of good risk patients, particularly outpatients. Later, after sufficient material has been accumulated, the newer drugs will be evaluated.

Budget Data Sheet

10. NIDR - 25(C)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $5,094 | 1 | 1 | 2 | 1/3 | 0 | 1/3 | |
| FY 1956 | $5,061 | 1 | 1 | 2 | 1/3 | 0 | 1/3 | |

12. BUDGET ACTIVITY:

| | | | |
|---|---|---|---|
| RESEARCH | /X/ | ADMINISTRATION | / / |
| REVIEW & APPROVAL | / / | TECHNICAL ASSISTANCE | / / |

13. COOPERATING UNITS:

Dr. Ralph Lloyd, Chief, Dental Department in the Clinical Center participated.

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NONE

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Clinical Investigations LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR - 26(C) SERIAL NO.

6. Clinical studies of the effect of specific intravenous therapy on wound healing in the oral cavity and on cases of intractable chronic gingivo-stomatitis. PROJECT TITLE

7. Dr. Ralph S. Lloyd, Chief, Dental Department PRINCIPAL INVESTIGATOR(S)

8. Dr. N. C. Leone and Dr. Edward J. Driscoll OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Clinical studies of the effect of specific intravenous therapy on wound healing in the oral cavity and on cases of intractable chronic gingivo-stomatitis.

There is reason to believe, based on previous published and unpublished research, that certain vitamin preparations, (notably B, B complex and C) when given intravenously, may favorably alter the body tissue response to injury, infection and other extraneous insults.

Pilot studies employing the drugs have been very encouraging.

The purpose of the present project is to test objectively the hypothesis of beneficial effect of these intravenous medications, using the tissues of the oral cavity as a yardstick in the measurements.

Methods Employed: All patients are given a thorough physical examination including blood, urine and x-ray studies in order to properly disclose and evaluate underlying physical disorders which might confuse or alter the final results.

A two-phase approach is being made to the problem of evaluation:

1. Bilateral oral surgical conditions of a similar nature are being operated upon. The surgery is performed on one side without the co-administration of the intravenous medication and serves as a control. The opposite side is the experimental side and the surgery is performed along with the intravenous medication regimen.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 26(C)
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

The degree of swelling, pain, bleeding and trismus serve as objective criteria in the evaluation of the effect of the therapy. This phase is intended to measure the tissue healing potential of the drugs.

2. The second phase is designed to measure the healing as well as the anti-infection and anti-inflammatory properies of the agents. For this project, patients with gingivo-stomatitis have been chosen. Desquamative and desquamative-like cases of gingivo-stomatitis are being utilized as the yardstick of the efficiency of the remedy in this phase.

All of the patients are given an oral prophylaxis and the mouth is put in as good order as possible. Then half of the patients are treated with the intravenous preparation and the other half are given placebos and are used as controls. Again suitable objective criteria have been set up for the measurement of the results.

Major Findings: In the pilot studies a favorable response in the oral surgery cases, marked particularly by less pain and swelling has been noted.

In the stomatitis series a good response has been observed in a substantial number of cases, particularly those which have been unresponsive to routine therapy.

Significance to Dental Research: The rate at which tissue heals, as well as the conditions which surround healing are of paramount importance in oral surgery and oral medicine.

The possibility exists that certain routine post-operative sequalae such as pain, edema, hemmorhage and trismus may be favorably altered by therapy.

If tissue healing can be assisted and resistance can be increased, then many of the intractable cases of stomatitis may be greatly improved by this approach.

Proposed Course of Project: Continuation and expansion of activities to include more oral surgery and stomatitis cases for study and evaluation of the drugs, as well as research into the etiology of the underlying disorders causing unfavorable tissue response.

Patient material: (1954 calendar year) - Outpatient - 8 (2 adult males and 6 adult females). Total number of patient visits - 144.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR - 26(C)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $12,687 | 2 | 0 | 2 | 1 | 0 | 1 | |
| FY 1956 | $12,588 | 2 | 0 | 2 | 1 | 0 | 1 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1).

Dr. Ralph Lloyd, Chief of the Dental Department [illegible] the Clinical Center, and Acting Chief of NIDR Clinical Investigations Branch, participated in this research project.

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None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Clinical Investigations LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR - 27(C) SERIAL NO.
6. Epidemiological, histological and radiological studies of the effects of fluorides in water supplies on humans, as individuals and in large population groups. PROJECT TITLE
7. Dr. Nicholas C. Leone PRINCIPAL INVESTIGATOR(S)
8. Dr. Harold R. Stanley OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Epidemiological, histological and radiological studies of the effects of fluorides in water supplies on humans, as individuals and in large population groups.

Objectives: To determine the effects of fluoride in water supplies on individuals and population groups in terms of physiological manifestations, including the skeletal system through:

Methods Employed: 1. Laboratory, clinical and epidemiological methods to study population groups using water with high fluoride content and control groups from non-fluoride areas.

2. Human autopsy studies (epidemiological, chemical and histological) of persons who have lived in areas of differing fluoride levels.

3. Large animal studies
   a. Autopsy (chemical and histological)
   b. Serial of peripheral blood and bone marrow studies.

4. Pharmacological studies of the intravenous effect of fluorides in dogs.

Patient Material: (1954 calendar year)

Epidemiological studiesin the field: adult male 85; adult female 152; Total 237.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 27(C)
SERIAL NO.

Major Findings: 1. In population groups using water with excessive fluorides (8 ppm F), no detrimental physical effects were discovered except for dental mottling in those persons who had spent their tooth formative years in the area.

2. Chemical and histological analyses of human autopsy material so far has not shown detrimental effects ascribable to ingestion of fluoride in water supplies.

3. Controlled large animal toxicity studies show that highly toxic levels of fluoride must be ingested for long periods before detectable effects can be shown.

4. A study of the intravenous effects of fluoride in dogs is in progress, preliminary to similar studies in humans.

Significance to DENTAL Research: The studies listed constitute a series of coordinated research activities intended to supply additional information on the physiological effects of fluorides on humans under various circumstances. Early fluoride studies showed excessive fluorides in drinking water to cause dental mottling but later epidemiological studies indicated specific anti-dental caries benefits through the inclusion of small controlled amounts of fluoride added to domestic water supplies (1 ppm). The present studies now indicate a wide margin of safety in the use of trace amounts of fluoride to a water supply. Also, there is good evidence that beneficial adult fluoride effects are derived from the presence of fluoride in a water supply.

The present studies are designed to clarify, substantiate and further our knowledge relating to the physiological non-dental effects and the margin of safety of fluoride ingested at various levels for long periods.

Proposed Course of Project: Continuation and expansion of studies listed above and the initiation of an epidemiological study at Framingham, Mass.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR - 27(C)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $19,229 | 1 | 3 | 4 | 1/3 | 3 | 3 1/3 | |
| FY 1956 | $26,136 | 2 | 3 | 5 | 1 1/3 | 3 | 4 1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Dr. Theodore F. Hilbish, Chief, Dept. of Diagnostic X ray, Clinical Center (Serial No. _____)
Office of Biometry, NIH (Serial No. _____)
Drs. Sessoms, Watkin, Gold and Lane, Nat'l Cancer Institute (Serial No. ___)
Drs. Terry, Stevenson, Bartter and Moran, Pharmacology, Nat'l Heart Institute (Serial No. _____)
Dr. Dawber, Nat'l Heart Institute (Framingham Study) (Serial No._____)
Clinical Pathology, Clinical Center, NIH (Serial No._____)
Utah State Agricultural College - Drs. Shupe and Greenwood.
The University of Tennessee - Drs. Merriman and Hobbs.
Dr. Erving Geever - Visiting Pathologist, Blockner-Penrose Hospital, Colorado Springs, Colorado.
Brooke Army Hospital, Ft. Sam Houston, Texas (U. S. Army) - Human Autopsy Study.
Fitzsimmons General Hospital, Denver, Colorado (U. S. Army) - Human Autopsy Study.
Scott and White Clinic, Temple, Texas - Bartlett-Cameron Study and Human Autopsy Study - Drs. Stevenson, Phillips, Stinson and Mr. Foegelle, X-ray Technician, Radiology and Pathology Departments.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. NIDR - 27(C)
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

1. Medical Aspects of Excessive Fluoride in a Water Supply - A Ten-Year Study by Leone, Nicholas C., M.D., Shimkin, Michael B., M.D., Arnold, Francis A., Jr., D.D.S., Stevenson, Clyde A., M.D. Zimmermann, Eugene R., D.D.S., Geiser, Patricia B., M.S., Lieberman, Jacob E., M.S. A.A.A.S. Symposium Edition on Fluorides, 110-130, November 1954. Public Health Reports 69: 10, 925-936, October 1954.

2. A Review of the Bartlett-Cameron Survey - A Ten-Year Fluoride Study, by Leone, Nicholas C., M.D., Arnold, Francis A., Jr., D.D.S., Zimmermann, Eugene R., D.D.S., Geiser, Patricia B., M.S., Lieberman, Jacob E., M.S. In Press, Journal of the American Dental Association.

3. The Oral Aspects of Excessive Fluoride in a Water Supply - A Ten-Year Study by Zimmermann, Eugene R., D.D.S., Arnold, Francis A., Jr., D.D.S., Leone, Nicholas C., M.D. In Press, Journal of the American Dental Association.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Clinical Investigations LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR- 28(C) SERIAL NO.

6. Variations in the oral microflora in relation to oral and systemic diseases
PROJECT TITLE

7. Dr. R. J. Fitzgerald
PRINCIPAL INVESTIGATOR(S)

8. Dr. R. S. Lloyd, Dr. A. J. Howell, M Rogosa, Dr. R. R. Omata
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Variations in the oral microflora in relation to oral and systemic diseases.

Objectives: This project has two main objectives: (a) to study the "normal" oral microflora and (b) to establish the nature and range of variations in the oral flora as a result of various oral and systemic disease conditions before, during, and after treatment.

Methods Employed: The approach to this problem calls for the application of a number of routine bacteriological procedures and the development of specialized bacteriological techniques for the isolation, enumeration, and identification of microorganisms from the saliva and the tissues of the oral cavity. The cooperation of other members of the Laboratory of Oral Bacteriology is provided where specific phases of the problem impinge on their main area of interest. For example: Dr. Howell has been collaborating on those aspects of the problem dealing with the filamentous microorganisms, Dr. Russell is collaborating in a study of the bacterial ecology of periodontal disease.

Current Status: The initial phases of the problem during the past year have been mainly exploratory. Some of the problems which have been studied are methods of obtaining representative samplings from the patients; the suitability of various culture media and methods for routine use and the familiarisation of clinical personnel with the nature and objectives of the program so that effective collaboration is maintained.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 28(C)
SERIAL NO.

9. PROJECT DESCRIPTION (Continued):

Thus far over one thousand saliva samples of the Clinical Center Patients have been subjected to bacteriological study and the data are now in the process of analysis.

Significance to DENTAL Research: In order for a proper comprehension of the nature of oral diseases and a rational approach to their control, it is necessary that the role of the oral microorganisms be fully understood. This presupposes a knowledge of the effects of microbial activity on the oral tissues and also the effects of the oral environment on the composition of the microbial population. The present study of the Clinical Center patients offers an unparalleled opportunity to study both of these necessary aspects of the problem by following the changes in the oral microbial population progressively during the course of a disease, its treatment and the reestablishment of a normal environment. Since changes in the general health of an individual may be reflected by changes in conditions in the oral cavity, the findings will be of interest to those studying systemic diseases as well as those concerned with oral diseases.

Proposed Course of Project: It is anticipated that this project will be expanded considerably in the future (a) to include the study of additional members of the oral flora (b) to concentrate intensively on the study of certain diseases and conditions in which the approach outlined appears to offer most promise of productivity. The exact course of future study will be determined to a considerable extent when the analyses of the data already accumulated have been completed.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR - 28(C)
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $7310 | 1 | 2 | 3 | 1/3 | 1 | 1 1/3 | |
| FY 1956 | $8060 | 1 | 2 | 3 | 1/3 | 1 | 1 1/3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

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None

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Epidemiology and Biometry — LABORATORY OR BRANCH
3. _____ — SECTION
4. _____ — LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-29 — SERIAL NO.

6. The epidemiology of dental caries, including the fluorine-caries relationship. — PROJECT TITLE

7. Dr. A. L. Russell — PRINCIPAL INVESTIGATOR(S)

8. Dr. Richard Hayes, Dr. Eugene Zimmermann — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Further to define the epidemiological characteristics of dental caries.

Objective: To elicit evidence as to the basic nature of this disease and the tissues it attacks so that present methods of control may be perfected and, possibly, new methods of control may be evolved.

Methods Employed: Direct examination of population groups, including groups of adults as well as groups of children, followed by statistical analysis of examination data to determine relative risk under varying conditions.

Major Findings: Major findings during the past year include: (a) Using a method whereby individual children are followed from year to year, it was demonstrated that there is a true reduction in caries incidence after two years' use of a fluoridated water, and that both pit-and-fissure and smooth-surface caries were inhibited. (b) Conclusions as to relative risk based upon data from mouth mirror and explorer field examinations are not changed when additional X-ray data are included. (c) Enamel opacities due to causes other than fluoride exposure are prevalent in children; criteria were presented which permit differentiation between the one and the other type of opacity in field studies.

Analysis of NIH Program Activities

Project Description Sheet

NIDR-29
SERIAL NO.

9. PROJECT DESCRIPTION (CONTINUED):

Significance to DENTAL Research: Data from direct observations of human populations provide a bridge whereby the findings from animal studies may be applied to human disease. Present attention is concentrated upon several areas where basic information is scanty or equivocal; for example, the analysis of the selective action of a fluoridated water used while teeth are calcifying, while young calcified enamel is maturing, and after adult enamel is present is expected to add information as to the basic mechanics and sequences of calcification and maturation of enamel.

Proposed Course of Project: Between five and six thousand elementary and junior high school children of Montgomery and Prince Georges counties, Maryland have been examined annually for the past three years in such manner that individual children may be followed from year to year. This examination should be repeated so long as it proves profitable. Single examinations of appropriate groups will be carried out where prevalence data are incomplete or where a hypothesis is to be tested (as during the past year when the principal investigator participated in dental examinations of a random sample of Baltimore adults).

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-29
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $ 23,380 | 3 | 3 | 6 | 1-2/3 | 1-1/3 | 3 | --- |
| FY 1956 | $ 24,142 | 3 | 3 | 6 | 1-2/3 | 1-1/3 | 3 | --- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1)

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

Complements (but does not duplicate) the Grand Rapids-Muskegon fluoridation study. (NIDR-32)

R.P.C. - 3
December 1954

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. NIDR-29
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

Zimmermann, E. R. Fluoride and nonfluoride enamel opacities. Pub. Health Rep. 69:1115-20, Nov. 1954.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH — INSTITUTE
2. Epidemiology and Biometry — LABORATORY OR BRANCH
3. _____ — SECTION
4. _____ — LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-30 — SERIAL NO.

6. The relationships between periodontal disease and general systemic condition, systemic disease, and aging. — PROJECT TITLE

7. Dr. A. L. Russell — PRINCIPAL INVESTIGATOR(S)

8. ----- — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The relationships between periodontal disease and (a) general health, (b) systemic disease, (c) sex, (d) race, and (e) aging.

Objective: To determine whether susceptibility to periodontal disease is a manifestation of general systemic condition, or due primarily to aging.

Methods Employed: Each patient examined in the dental clinic of the Clinical Center is scored for periodontal disease. This score is then related to data obtained from the patient's medical record. The scoring method permits direct comparison with findings obtained from examination of persons not hospitalized and free of known illness. Initial analysis is proceeding on the basis of within-group comparisons.

Major Findings: The scoring method proved to be accurate enough for statistical studies when scores were compared with findings from detailed clinical examinations, including X ray. Too few patient records have been processed for valid findings in the major area of study.

Significance to Dental Research: Periodontal disease is generally considered to be the resultant of local irritating factors combined with systemic factors which interfere with tissue response and repair. Evidence as to these systemic factors is conflicting.

Proposed Course of Project: Continuation along the present lines until enough records have been processed for valid findings and logical hypotheses. This will probably require two or three years of work.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-30
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $ 3,521 | 1 | 0 | 1 | 1/3 | 0 | 1/3 | -- |
| FY 1956 | $ 7,037 | 1 | 1 | 2 | 1/3 | 1 | 1-1/3 | -- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1)

Dental Clinic Examining Staff, Clinical Center
Medical Records Section, Clinical Center

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17.

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH — INSTITUTE
2. Epidemiology and Biometry — LABORATORY OR BRANCH
3. _____ — SECTION
4. _____ — LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-31 — SERIAL NO.

6. Epidemiology of the periodontal diseases — PROJECT TITLE

7. Dr. A. L. Russell — PRINCIPAL INVESTIGATOR(S)

8. Dr. Richard Hayes, Dr. Eugene Zimmermann — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: The epidemiology of the periodontal diseases.

Objective: To compile a descriptive epidemiology of the group of disease entities commonly called "pyorrhea."

Methods Employed: Direct examination of population groups, particularly adults and older children, followed by statistical analysis of examination data to determine relative risk under varying conditions.

Major Findings: The periodontal status of an individual may be scored, under field conditions with a minimum of equipment, with an accuracy quite acceptable for epidemiological investigation. Periodontal disease is a slow process of destruction of the tissues which support the teeth in the mouth; the age of oneet is earlier than is commonly believed. Investigations with children of junior high school and high school age indicate that differences from city to city are, on the whole, lesser in magnitude than differences in comparable but independent groups of children in the same city year after year.

Significance to DENTAL Research: There is little or no epidemiological information on periodontal disease, largely because no adequate means of scoring has previously been available. Hence the first requisite in this field is to determine the differences between people who develop

Analysis of NIH Program Activities

Project Description Sheet

NIDR-21
SERIAL NO.

PROJECT DESCRIPTION (CONTINUED):

the disease and people who do not. Lacking this information, it is difficult to translate laboratory studies into human experience.

Proposed Course of Project: Field examinations of older children will be continued and extended in an effort to determine the characteristics of those children who show signs of the disease at the earlier age, and hence are presumably the more susceptible. Prevalence data from the examination of a random sample of Baltimore adults will be tabulated and analyzed. If possible another adult group will be examined in the field during the next fiscal year.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-31
SERIAL NO.

11. BUDGET DATA

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $ 13,447 | 3 | 2 | 5 | 1 | 2/3 | 1-2/3 | --- |
| FY 1956 | $ 13,313 | 3 | 2 | 5 | 1 | 2/3 | 1-2/3 | --- |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

None

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17.

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH — INSTITUTE
2. Epidemiology & Biometry Branch — LABORATORY OR BRANCH

3. Field Unit — SECTION
4. Grand Rapids, Michigan — LOCATION (IF OTHER THAN BETHESDA)
5. NIDR-32 — SERIAL NO.

6. Grand Rapids-Muskegon Fluoridation Study — PROJECT TITLE

7. Dr. David B. Scott, Dr. Albert L. Russell — PRINCIPAL INVESTIGATOR(S)

8. Dr. Robert C. Likins, Dr. Robert M. Stephan — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Project: Evaluation of the effectiveness of fluoridation of Grand Rapids water supply for the purpose of caries control.

Objectives: This project is designed to determine whether or not the fluoridation of a water supply will control dental caries in a community. In addition, certain aspects of the dental economics and dental manpower needs of a community are being ascertained. Factors related to caries etiology are also under consideration.

Methods Employed: This study has been in progress since 1944. Each year dental examinations are made of approximately 5,000 school children in Grand Rapids (the study city) and about 3,000 examinations of Muskegon school children (controls). Changes in dental caries prevalence are noted from year to year. These changes in caries prevalence are studied from the standpoint of the cause of the disease and the problems involved in treatment. Epidemiological and statistical methods are used to evaluate these factors.

Major Findings: There has been a consistent decrease in the incidence of dental caries in Grand Rapids school children since the inauguration of the study. This change has been most pronounced in persons born since fluoridation; however a significant effect has been observed on persons whose teeth had already been formed prior to starting the study.

NIDR-32
SERIAL NO.

Results from bacteriological examinations of salivas from these children suggest that there has been a change in the oral flora. There is no evidence that this change in oral flora could have been considered prognastic of the beneficial effect observed.

Studies related to the non-dental effects of fluoridation support the belief that this level of fluoride in a water supply has no other known physiological effect.

Significance to DENTAL RESEARCH: This study not only proves the effectiveness and safety of water fluoridation as a carrier control procedure, it also furnishes important leads to further research into the etiology of the disease. In particular, significant findings of clinical importance are resulting from the data obtained on changes in individual and specific tooth susceptibility.

Proposed Course of Project: This study was planned as a 10-15 year project. This completes its 10th year of operation and consequently special attention was given to making sure a representative sample of children were examined. The results of the 10-year study will be published in a special monograph.

It is planned to continue this study for about 5 years more in order to complete the findings on a full group of school-aged persons. During the latter span of the study the number of annual examinations will be decreased, concentrating efforts in the older, 10-16 year, age group.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-32
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| * FY 1955 | $ 5,878 | | 1 | 1 | | 1 | 1 | |
| * FY 1956 | $ 5,878 | | 1 | 1 | | 1 | 1 | |

DuBois plus part time people and supplies.
*The planning and examinations required by this project are conducted by the professional staff listed in items 7 and 8. Professional time on this project does not exceed 1/3 man-years of any one professional.

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]
REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956:

Division of Dental Public Health, Michigan Department of Health, University of Michigan.

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH:

(Russell's project in Montgomery County) - NIDR-29

Analysis of NIH Program Activities

Honors, Awards, and Publications Sheet

15. NIDR-32
SERIAL NO.

16. LIST PUBLICATIONS OTHER THAN ABSTRACTS FROM THIS PROJECT DURING CALENDAR YEAR 1954:

The Use of Fluoride Compounds for Dental Caries Control. Arnold, F. A. To be published by WHO in a report of a dental health seminar held at Wellington, New Zealand.

Post Fluoridation Status of Dental Health in Grand Rapids, Michigan. Arnold, F. A., and Knutson, J. W. To be published in the Journal of Pennsylvania State Dental Association.

17. LIST HONORS AND AWARDS TO PERSONNEL RELATING TO THIS PROJECT DURING CALENDAR YEAR 1954:

Data from this study, as presented, resulted in First Prize for Scientific Exhibits at American Dental Association meeting in Miami, Florida.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Extramural Program Branch LABORATORY OR BRANCH
3. SECTION
4. LOCATION (IF OTHER THAN BETHESDA)
5. NIDR 33 SERIAL NO.
6. Extramural Projects PROJECT TITLE
7. Under the office of the Director PRINCIPAL INVESTIGATOR(S)
8. OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Research Grants: The awarding of dental research grants to applicants who are engaged in research in dental schools and other institutions will stimulate dental research and ultimately disclose methods for prevention and control of dental diseases. In addition it will improve methods of diagnosing and treating defects that cannot be prevented.

A sum of $421,000 was appropriated for this activity for the 1955 fiscal year and for the first six months of operation a total of 51 grants have been awarded delegating $381,146 of the amount appropriated. There will be two Council meetings during the last half of this fiscal year and as of this date we have on hand 19 applications for grants totalling $274,364.

Our balance of approximately $40,000 will only permit the approval of 4 or 5 applications of the 19 received.

We have 30 grants that will be carried over into the next fiscal year, committing moral obligations totalling $276,868.

Research Fellowships: This program is designed to increase the dental potential by encouraging young college students to enter the field of dental research. Fellowships will be awarded to students who have completed their pre- and postdoctoral work. We have inaugurated a new program this year designed to interest undergraduate students to continue in dental research. Such awards will be made to the dental schools and selection of the fellows will be the decision of the school.

Analysis of NIH Program Activities

Project Description Sheet

NIDR 33
SERIAL NO.

9. Project Description (Continued):

For the fiscal year 1955 a sum of $100,000 was appropriated by Congress for this activity. During the first six months of the fiscal year 21 fellowships have been awarded obligating $54,228. Of the amount appropriated within these totals 11 dental schools were awarded part-time grants amounting to $9,504.

Review and Approval: This activity is charged with the responsibility for arranging meetings of the National Advisory Dental Research Council in carrying out its statutory obligations for the proper evaluation of dental research grant applications. It provides the necessary clerical assistance in handling the records and reports that are involved and also provides for the expenses incurred by the Council members. Congress appropriated a sum of $11,000 to support this function during the fiscal year 1955.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 33
SERIAL NO.

11. BUDGET DATA

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | BUDGETED POSITIONS OTHER | BUDGETED POSITIONS TOTAL | MAN YEARS PROF | MAN YEARS OTHER | MAN YEARS TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $11,000 | | 1 | 1 | | 1 | 1 | -- |
| FY 1956 | 11,000 | | 1 | 1 | | 1 | 1 | -- |

12. BUDGET ACTIVITY:

RESEARCH [ ] ADMINISTRATION [ ]

REVIEW & APPROVAL [X] TECHNICAL ASSISTANCE [ ]

13. IDENTIFY ANY COOPERATING UNITS OF THE PUBLIC HEALTH SERVICE, OR OTHER ORGANIZATIONS, PROVIDING FUNDS, FACILITIES, OR PERSONNEL FOR THIS PROJECT IN EITHER 1955 or 1956: IF COOPERATING UNIT IS WITHIN NIH INDICATE SERIAL NO(S) (ITEM 1

Division of Research Grants

14. IF THIS PROJECT RESEMBLES, COMPLEMENTS, OR PARALLELS RESEARCH DONE ELSEWHERE IN THE PUBLIC HEALTH SERVICE (WITHOUT INTERCHANGE OF PERSONNEL, FACILITIES OR FUNDS), IDENTIFY SUCH RESEARCH: (BY SERIAL NO.(S) IF WITHIN NIH)

None

15 - 17

None

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE
2. Office of Associate Director — LABORATORY OR BRANCH
3. _____ SECTION
4. _____ LOCATION
5. NIDR -34 SERIAL NO.

6. Responsibilities of the Office of the Associate Director

7. Associate Director — PRINCIPAL INVESTIGATOR(S)

8. Two employees. — OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Objectives: The objective of this office is to conduct, assist and direct laboratory and clinical research investigations at Bethesda and in the field; in the causes, diagnosis, treatment and prevention of dental diseases.

Significant Contribution: The significant functions of this office are to plan, coordinate and supervise research studies in the fields of epidemiology, oral bacteriology, pathology, oral and biological chemistry, physiology and histology within the Institute. In addition, it is the responsibility of the Associate Director to coordinate these studies with those being conducted in other Institutes and other organizations.

It should be pointed out that as of this date the Associate Director's position is vacant and the responsibilities of the position are being carried on by the Institute Director, Laboratory and Branch Chiefs. In carrying out these duties, not any one individual spends more than one-third of his time on this assignment.

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR-34
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS | | | MAN YEARS | | | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| | | PROF | OTHER | TOTAL | PROF | OTHER | TOTAL | |
| FY 1955 | $18,660 | 1 | 1 | 2 | 1 | 1 | 2 | |
| FY 1956 | $24,987 | 2 | 1 | 3 | 2 | 1 | 3 | |

12. BUDGET ACTIVITY:

RESEARCH [X] ADMINISTRATION [ ]

REVIEW & APPROVAL [ ] TECHNICAL ASSISTANCE [ ]

13 - 17

NONE.

R.P.C. - 1
December 1954

Analysis of NIH Program Activities

Project Description Sheet

1. DENTAL RESEARCH INSTITUTE 2. OFFICE OF THE DIRECTOR LABORATORY OR BRANCH

3. _____ 4. _____ LOCATION 5. NIDR - 35 SERIAL NO.

6. Significant Contributions to the Research Program.
PROJECT TITLE

7. Director
PRINCIPAL INVESTIGATOR

8. 6 Employees
OTHER INVESTIGATORS

9. PROJECT DESCRIPTION:

Objectives: The major objectives of this activity is to provide effective leadership for the various functions within the Institute. The staff provides general program direction and the necessary administrative services. It also maintains an effective liaison with other Institutes and public and private organizations whose programs are closely related to our functions.

Significant Contributions: The most important organizational change during the year was the realignment of an administrative structure that existed since the Institute was established. The major research functions in the Institute were organizationally listed under one laboratory designated as the Laboratory of Basic Research. This Laboratory consisted of three sections (1) Oral Bacteriology, (2) Oral and Biological Chemistry, and (3) Functional Morphology. Due to program expansion and in order to obtain a more effective operation, these sections were changed to laboratories. In our future planning, we will establish sections within these laboratories and the organizational pattern for this breakdown has been tentatively established.

Analysis of NIH Program Activities

Project Description Sheet

NIDR - 35
SERIAL NO.

9. PROJECT DESCRIPTION (Continued)

Significant Contributions: (Continued)

Another project on which a considerable amount of staff time was devoted was the plans for renovating space assigned to NIDR in Building #2. In connection with this project, one Laboratory (Functional Morphology) has been moved into permanent space in that building.

A major significant contribution to our research program was the activation of our Clinical Investigations Branch in the Clinical Center in September of 1954. The major research activities in the clinical area are being coordinated with the basic research program.

A review of our internal administrative procedures was completed and revisions were made in order to provide a more effective administrative operation within the Institute.

R.P.C. - 2
December 1954

Analysis of NIH Program Activities

Budget Data Sheet

10. NIDR 35
SERIAL NO.

11. BUDGET DATA:

| | ESTIMATED EXPENDITURES | BUDGETED POSITIONS PROF | OTHER | TOTAL | MAN YEARS PROF | OTHER | TOTAL | PATIENT DAYS |
|---|---|---|---|---|---|---|---|---|
| FY 1955 | $42,900 | 1 | 6 | 7 | 1 | 6 | 7 | |
| FY 1956 | $42,900 | 1 | 6 | 7 | 1 | 6 | 7 | |

12. BUDGET ACTIVITY:

RESEARCH [ ] ADMINISTRATION [ ]

REVIEW & APPROVAL [X] TECHNICAL ASSISTANCE [ ]

13 - 17

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